# United States Department of the Interior
# Bureau of Land Management

---

**Environmental Assessment UT-040-08-036**
**August 11, 2008**

## OIL AND GAS LEASING IN THE EASTERN PORTION OF THE CEDAR CITY FIELD OFFICE

***Location:*** Cedar City Field Office, Eastern Area
Beaver and Iron Counties, Utah

***Applicant/Address:*** U.S. Department of the Interior
Bureau of Land Management
Cedar City Field Office
176 East DL Sargent Drive
Cedar City, Utah 84721

---

U.S. Department of the Interior
Bureau of Land Management
Cedar City Field Office
176 East DL Sargent Drive
Cedar City, Utah 84721
Phone: (435) 586-2401
Fax: (435) 865-3058

BLM

# OIL AND GAS LEASING IN THE EASTERN PORTION OF THE CEDAR CITY FIELD OFFICE

## UT-040-08-036

## Contents

## OIL AND GAS LEASING IN THE EASTERN PORTION OF THE CEDAR CITY FIELD OFFICE

## UT-040-08-036

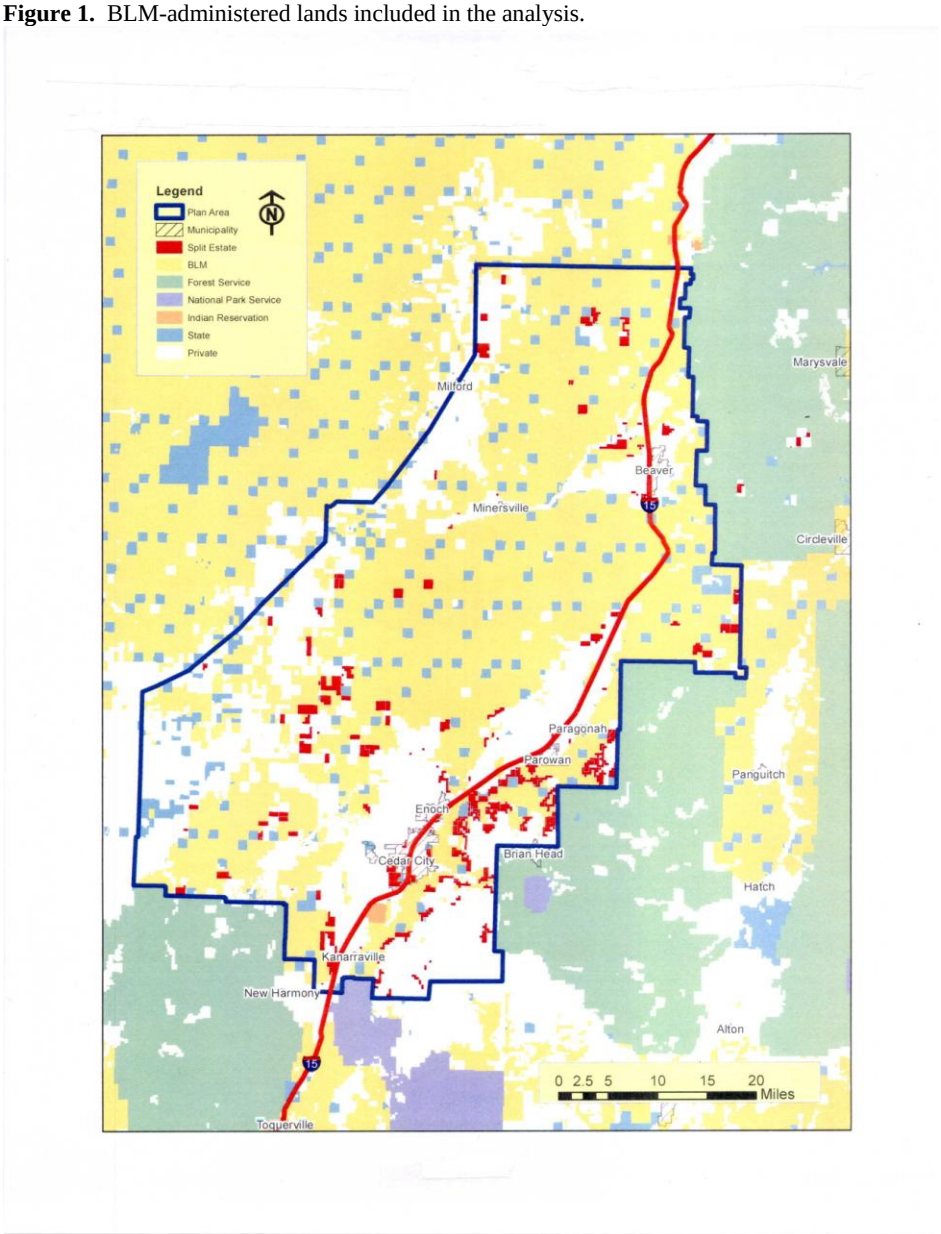
# 1.0 INTRODUCTION/PURPOSE AND NEED

This Environmental Assessment (EA) has been prepared by the Bureau of Land Management (BLM) to supplement analysis found in the existing land use plan (LUP) regarding the potential environmental impacts of oil and gas leasing on lands in the eastern portion of the Cedar City Field Office (CCFO). This EA represents a programmatic analysis that contains area-wide descriptions of existing resources and provides a broad environmental impact analysis. The direct, indirect, and cumulative environmental effects that would result from implementing the alternatives are disclosed in this EA as required by the National Environmental Policy Act (NEPA) of 1969 (42 USC 4321-4347) and Council on Environmental Quality regulations (40 CFR 1500-1508).

The EA assists the BLM in project planning and ensuring compliance with NEPA, and in making a determination as to whether any "significant" impacts could result from the analyzed actions. "Significance" is defined by NEPA and is codified in regulation at 40 CFR 1508.27. The EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of "Finding of No Significant Impact" (FONSI). If the decision maker determines that this project could result in "significant" impacts, then an EIS would be prepared for the project. If not, a Decision Record would be signed for the EA, approving the selected alternative. A FONSI statement documents the reasons why implementation of the selected alternative would not result in "significant" environmental impacts (effects) beyond those already addressed in the *Final Cedar Beaver Garfield Antimony Resource Management Plan* (CBGA RMP; BLM 1984) and the *Record of Decision (ROD) on the Final Cedar Beaver Garfield Antimony Resource Management Plan/Final Environmental Impact Statement* (CBGA FRMP/FEIS; BLM 1986).

The scope of this EA is limited to lands that overlie federal minerals managed by the BLM in the eastern portion of the CCFO, which encompasses approximately 960,000 total acres in southwestern Utah (Figure 1). This EA includes a broad analysis of the impacts of implementing the Proposed Action or other alternatives, to which subsequent specific proposals would be tiered. Subsequent decision documents prepared for specific leasing proposals would tier to, or incorporate by reference, relevant sections of this programmatic EA. Tiering to this EA would allow the BLM to develop project-specific proposals that concentrate on the issues relevant to a particular proposed project. This EA will be used to determine the necessary measures that could be included as stipulations, lease notices, special conditions or restrictions on future leases as necessary to protect the resources within the CCFO. The analysis serves to verify conformance with the approved LUP and provides rationale for choosing to defer lands from leasing as well as providing rationale for attaching additional lease stipulations and notices to manage resources.

**Figure 1.** BLM-administered lands included in the analysis.



## 1.1 Purpose and Need

The purpose of this EA is to analyze leasing of oil and gas parcels that cannot be leased at this time without this analysis due to changes in the human environment that have occurred since the completion of the current LUP and supplemental analysis for oil and gas leasing (e.g., increased growth, locations of special status species, identification of traditional cultural properties in the Parowan Gap). Leasing is conducted to meet requirements of the Mineral Leasing Act of 1920, as amended, the Mining and Minerals Policy Act of 1970, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Reform Act). The sale of oil and gas leases is needed to meet the growing energy needs of the United States public. The BLM is required by law to look at areas that have been nominated and there has been increased interest in the area in recent years. Although an oil or gas discovery is considered to be unlikely, based on the reasonably foreseeable development (RFD) scenario which the BLM has determined is valid even in today's energy driven market, such a discovery would require the completion of a new analysis.

Offering parcels for competitive oil and gas leasing provides for the orderly development of fluid mineral resources under BLM's jurisdiction in a manner consistent with multiple use management and environmental consideration for the resources that may be present. This requires that adequate provisions are included with the leases to protect public health and safety and assure full compliance with the spirit and objectives of NEPA and other federal environmental laws and regulations. Continued leasing is necessary to maintain options for production of oil and gas as companies seek new areas for production or attempt to locate and develop previously unidentified, inaccessible or uneconomical reserves.

## 1.2 Conformance with Applicable Land Use Plan and Supplemental Analysis

Pursuant to 40 CFR 1508.28 and 1502.21, this EA tiers to and incorporates by reference the information and analysis contained in the ROD of the CBGA FRMP/FEIS, approved October 1, 1986. The proposed action is in conformance with the CBGA FRMP/FEIS because it is specifically provided for in the planning decision. Oil and gas leasing categories were identified in the *Cedar City District Oil and Gas Leasing Environmental Analysis Record* (EAR) prepared in 1976 and reviewed by the CBGA RMP and the *Supplemental EA for Oil and Gas Leasing, Cedar City District* (EA #UT-040-88-69, BLM 1988). The original oil and gas leasing categories established in 1976 were amended in the CBGA RMP to protect other resource values. The CBGA RMP categorizes all lands in the planning area that are available for leasing along with any applicable stipulations that would be attached to leases offered for certain areas (BLM 1984; pages 25-56 and Mineral Map 1). Appendices B and C in the CBGA RMP contain a detailed description of the oil and gas leasing categories and stipulations and the resources they are designed to protect. The CBGA RMP designated 1,071,400 acres of federal minerals open for fluid minerals leasing and development. Of these 915,900 acres are Category 1 lands that are open to leasing with *Standard Stipulations*; 145,100 acres are Category 2 lands that are open to leasing with *Special Stipulations*; and 10,400 acres are Category 3 lands that are open to leasing with *No Surface Occupancy*. There are no designated Category 4 lands – Closed to Leasing – within the area considered in this EA.

Leasing of all lands considered in this EA was analyzed in the 1976 Cedar City District Oil and Gas EAR, the 1986 CBGA FRMP/FEIS, and the 1988 Supplemental EA for Oil and Gas Leasing, Cedar City District. The EAR analyzed the environmental consequences of oil and gas leasing in the Cedar City District and established four leasing categories that required

appropriate lease stipulations for protection of the environment. The CBGA FRMP/FEIS amended these categories and lease stipulations in 1986. The 1988 Supplemental EA, analyzed the cumulative impacts of oil and gas leasing based on a RFD scenario and estimated that exploration wells would continue to be drilled in the Cedar City District at the rate of about three wells per year with a low success rate for finding commercial quantities – no more than 10 percent based on the average success rate for wildcat wells in the United States. The 1988 Supplemental EA projected a total of 310 acres of surface disturbance from oil and gas activities occurring over 10 years and concluded that, overall, the cumulative impacts from oil and gas exploration in the CCFO would not be significant.

### 1.3 Relationship to Statutes, Regulations, or Other Plans

The proposed and other action alternatives are consistent with federal environmental laws and regulations, Executive Orders, and Department of Interior and the BLM policies and are in compliance, to the maximum extent possible, with state laws and local and county ordinances. It is the policy of the BLM as derived from various laws, including the Mineral Leasing Act of 1920, as amended, and the Federal Land Policy and Management Act of 1976 (FLPMA, Section 103(l)), to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs. As such the proposed alternatives would meet requirements of the Mineral Leasing Act of 1920 as well as the Mining and Minerals Policy Act of 1970 and the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Reform Act). The Reform Act directs the BLM to conduct quarterly oil and gas lease auctions within each state whenever eligible lands are available for leasing. Mineral exploration and production is one of the principal uses of the public lands recognized by FLPMA and is consistent with the Energy Policy Act of 2005 and other applicable laws, regulations, and policies.

A lease for oil and gas gives a lessee the right to drill and produce, subject to the lease terms, any special stipulations, other reasonable conditions, and approval of an Application for Permit to Drill (APD). In approving the APD, or when any surface disturbing activity may occur, the BLM reviews the adequacy of the current environmental analysis and reviews compliance with NEPA requirements. The BLM may conduct additional site-specific evaluations at that time and may require additional reasonable mitigation measures in the approval of an APD, consistent with the lease terms and stipulations. Holders of oil and gas leases are required to comply with all applicable federal, state, and local laws and regulations including obtaining all necessary permits required should lease development occur.

BLM reviewed the proposed action and determined it would be in compliance with threatened and endangered (T&E) species management guidelines outlined in the August 2006 *Conservation Measures from Land Use Plan-level Consultations for T&E Species of Utah*. Consultation with the U.S. Fish and Wildlife Service (FWS) over leasing with species-specific T&E lease notices has been completed and concurrence has been reached that leasing with the appropriate lease notices attached would result in a "not likely to adversely affect" determination for T&E species (December 16, 2004). Because this programmatic Section 7 Consultation is current, no further Endangered Species Act (ESA) consultation with the FWS is required at this stage. Although the California condor was not included in these prior consultation documents, the recommendation contained in the FWS Utah Field Office *Guidelines for Raptor Protection from Human and Land Use Disturbances* (FWS 2002) and the *Best Management Practices for Raptors and Their Associated Habitats in Utah* (Utah State Office Instruction Memorandum No. UT 2006-096; BLM 2006a) are followed for this and other raptor species. Consultation with the

FWS is ongoing for the California condor and a lease notice has been drafted to ensure any leasing activities carried out in areas that may contain potential habitat for the condor are in compliance with the Endangered Species Act.

Compliance with Section 106 responsibilities of the National Historic Preservation Act (NHPA) of 1966, Public Law 89-665 as amended in 1992, were adhered to by following the 2001 Protocol Agreement between the Utah BLM and the Utah State Historic Preservation Office (SHPO), which was developed under the National Cultural Programmatic Agreement between the BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers, and other applicable BLM handbooks. Section 106 Consultation with the SHPO was been completed for this EA.

### 1.4 Identification of Issues

During the preparation of this EA, environmental issues and resource concerns for the area being considered for oil and gas leasing were identified by an Interdisciplinary Team (ID Team) of resource professionals assembled by the CCFO. Elements of the environment addressed by law and other elements were included in this review. This process included a review of previous lease sales (including concerns presented in past protests) and past coordination with cooperating federal and state agencies with jurisdictional responsibilities or specialized expertise in the area including the FWS, Utah Division of Wildlife Resources (UDWR) and Native American Tribes. The issues identified for detailed analysis in this EA include the resources listed below.

- Cultural Resources
- Native American Religious Concerns
- Threatened, Endangered, or Candidate Animal Species
- Fish and Wildlife, including Special Status Species other than FWS candidate or listed species (e.g., migratory birds)
- Vegetation, including Special Status Plant Species other than FWS candidate or listed species
- Invasive, Non-Native Species
- Soils
- Recreation
- Visual Resources
- Paleontology
- Socio-economics
- Wilderness Characteristics.

The ID Team checklist documents those resources that are not in the planning area. Other potential issues and resources were considered, but did not warrant detailed or further analysis for the reasons identified in the ID Team Review Checklist attached as Appendix A to this EA.

Air quality was considered and determined not to warrant detailed or further analysis, as indicated in Appendix A. This conclusion is primarily based on the low RFD for the Cedar City Field Office, the low ambient concentrations for criteria pollutants that currently exist within the planning area, and the minimal emissions expected to be contributed from this project.

Overall air quality in the Cedar City Field Office area is good. This is due primarily to the region's remoteness, low population, limited industrial development and lack of major urban communities. Both Beaver and Iron Counties are classified as "attainment" or "unclassifiable" with respect to

**Formatted:** Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers

National Ambient Air Quality Standards (NAAQS) for all criteria pollutants. In addition, based on the *2007 Division of Air Quality Annual Report,* the area is likely to be in attainment with respect to the new particulate matter (PM) 2.5 standards enacted in September 2006 and the new ozone standard enacted March 12, 2008, although the final determination has not yet been made (Utah Department of Air Quality [UDAQ] 2008).

Given the low ambient concentrations that exist in the CCFO for criteria pollutants, it is expected that the increase in emissions of CO, $NO_x$, $SO_2$, $PM_{10}$, and $PM_{2.5}$ for the Proposed Action would not cause concentrations to exceed NAAQS or state ambient air quality standards. All actions analyzed in the EA would adhere to current air quality standards and emissions would be within established limits.

Although climate change is an acknowledged factor increasingly affecting many resources and management decisions, the alternatives as described below would not contribute to climate change to a degree that detailed analysis is needed or justified.

BLM has considered the Department of Interior Secretary Order #3226, which provides that the BLM will consider and analyze potential climate change impacts when making major decisions regarding the potential utilization of resources include planning and management activities associated with oil, gas and mineral development on public lands. As such, the BLM recognizes that the decision to open these lands to oil and gas extraction could result in a variety of effects with the potential to contribute to climate change including: emissions of carbon dioxide and nitrous oxides from mobile sources during exploration; emissions of carbon dioxide, carbon monoxide, nitrous oxides and methane during extraction, processing, and transportation from drilling, extraction and processing equipment, such as drilling rigs, compressors, pumps and other equipment; emissions of methane during extraction, processing and transportation from escaped "natural gas"; and emissions of carbon dioxide, carbon monoxide, nitrous oxides and methane during the use of the extracted oil and gas such as the emissions of carbon dioxide, carbon monoxide, nitrous oxides and methane from natural gas fired power plants and the emissions of carbon dioxide, carbon monoxide, and nitrous oxides from mobile sources burning natural gas or gasoline that comes from petroleum.

BLM recognizes the findings of various studies (U.S. Climate Change Science Program 2008; National Science and Technology Council 2008; Revkin 2008; IPCC 2007; RMCO and NRDC 2008; Hansen et al. 2005) and that global warming has the potential to affect biodiversity as well as result in impacts to human society (WHO 2002, Epstein and Mills 2005). Effects of climate change on ecosystems can include: increases in fire, insect outbreaks and storms; transformation of grasslands to woody shrublands; increased rates of perennial plant mortality; accelerated rates of erosion; increased exotic plant invasions including non-native annuals; reductions in water resources; increased species extinctions and wildfire (Berman 2007), lower precipitation, and increased temperatures with decreased runoff (USGS 2007; USDA 2007). The activities authorized herein under the current RFD would result in negligible increases in emissions of greenhouse gases.

## 2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

This chapter describes the alternatives considered during the preparation of this EA. The analysis includes a range of alternatives including leasing with standard stipulations, leasing with additional resource protective measures (which could include special stipulations, notices, and no surface occupancy (NSO)), and no leasing. This range of alternatives was carried forward to provide a comprehensive and programmatic analysis of the issues identified above.

### 2.1 Description of Alternatives

Three alternatives are analyzed in detail in this EA; they are the No Action alternative (Offer Leases Consistent with CBGA RMP); the Proposed Action alternative (Offer Leases with Additional Resource Protective Measures); and the No Leasing alternative. The lands under consideration in this EA are located in Iron and Beaver Counties, in southwest Utah (Figure 1) and include approximately 895,000 acres of BLM-managed surface lands plus approximately 65,000 acres of split-estate lands, where the subsurface mineral estate is managed by the BLM but the surface is private or state-owned. Of the 960,000 acres of federal mineral lands considered in this EA, approximately half has either been leased (374,000 acres) or has the lease issuance awaiting protest resolution (108,000 acres). Of the remaining 478,000 acres, approximately one-quarter (121,000 acres) has had industry expressed interest.

### 2.2 No Action Alternative – Offer Leases Consistent with Existing Land Use Plan (CBGA RMP)

This alternative represents a continuation of the current management and thus serves as a baseline for leasing lands in the planning area. Currently areas are offered for oil and gas leasing subject to measures necessary to mitigate adverse impacts, according to the categories, terms, conditions, and stipulations identified in the CBGA FRMP/FEIS and the Supplemental EA for Oil and Gas Leasing, Cedar City District. Measures identified in the CBGA FRMP/FEIS are applied through a category system at the time of leasing and the on the ground implementation of those stipulations and categories is accomplished through the APD process (BLM 1986).

Category 1 lands would be available for leasing with standard lease terms, as described in the CBGA FRMP/FEIS. In addition to protections provided for under standard terms of the lease, two mandatory stipulations are imposed by policy by the BLM on every lease issued: one refers to the statutory protection of cultural resources and one for the statutory protection of threatened or endangered species, as described below.

All leases issued subsequent to October 5, 2004 would include the lease stipulation for the protection of cultural resources (per BLM Washington Office Instruction Memorandum No. 2005-03, Cultural Resources and Tribal Consultation for Fluid Minerals Leasing), which states:

> "This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any

activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated."

In addition all leases issued would include the lease stipulation for the protection of threatened or endangered species (per BLM Washington Office Instruction Memorandum No. 2002-174, Endangered Species Act Section 7 Consultation), which states:

> "The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that would contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity until it completes its obligations under applicable requirements of the ESA as amended, 16 United States Code (USC) 1531 et seq. including completion of any required procedure for conference or consultation."

Category 2 lands would be available for leasing with the standard lease terms, the two mandatory lease stipulations described above, and the special stipulations identified in the CBGA FRMP/FEIS. These special stipulations include timing or controlled surface use stipulations for crucial deer and elk winter range, sage-grouse, golden and bald eagles, riparian areas, and Visual Resource Management Class II areas, and No Surface Occupancy for areas containing the Utah prairie dog, Quichapa Lake, Recreation and Public Purpose (R&PP) lands, recreation sites, and administrative sites (see Appendix C in the CBGA FRMP/FEIS; BLM 1984).

Stipulations serve to modify the rights granted by the standard lease terms when the BLM determines that conflicts exist between the relative resource values, uses, and/or users and oil and gas operations that cannot be adequately managed under the standard lease terms or by relocating the proposed operations up to 200 meters or delaying operations by up to 60 days. BLM regulations at 43 CFR 3101.1-2 allow, at a minimum, for the relocation of proposed oil and gas leasing operations up to 200 meters and/or timing limitations up to 60 days (that is, the 200 meter/60-day rule) to provide additional protection to ensure that proposed operations minimize adverse impacts to resources, uses, and users. In addition to stipulations, notices can be attached to a lease to inform the lease purchaser of other resource issues that may occur on the parcel. Notices are used to identify the need for protection of a resource that was not addressed in previous planning documents.

Category 3 lands would be available for leasing only with the NSO stipulation identified in the CBGA FRMP/FEIS for those leases where adverse impacts would occur through surface use of the land by oil and gas exploration and development. This stipulation generally applies to areas containing the Utah prairie dog, riparian resources, Recreation and Public Purpose (R&PP) lands, and residential areas, as identified in the RMP.

Under this alternative future lease proposals would involve preparation of a Documentation of Land Use Plan Conformance and Determination of NEPA Adequacy (DNA) to document that the impacts of leasing specific parcels had been sufficiently analyzed in this programmatic EA or other existing NEPA documents and there had not been significant changes in circumstances or conditions that would require supplementation of the existing analyses (40 CFR 1502.9). If the

existing NEPA analysis was sufficient to analyze the effects of leasing the parcels, then the leases could be sold.

### 2.3 Proposed Action Alternative – Offer Leases with Additional Resource Protective Measures Consistent with Existing Lease Categories

The Proposed Action alternative would lease lands within the planning area subject to *additional resource protective measures*; these measures would be beyond the terms and stipulations described for the No Action alternative and beyond that which could be achieved through relocation of the proposed activity up to 200 meters and/or timing restrictions of 60 days or other existing administrative actions. The presumption in this alternative is that the resource protective measures included in the No Action alternative would not be sufficient to protect some resources and consequently additional protections would be necessary to prevent unnecessary and undue degradation of public lands or resources. The effects of implementing the Proposed Action alternative would be similar to the No Action alternative with the caveat that, under this alternative, more stringent measures would be applied to some leases to further protect specific resources.

This additional protection would occur where the BLM has authority to take discretionary action to protect resources in order to comply with agency regulations or policies (as opposed to compliance with non-discretionary laws or statutes). These resource protective measures would be applied as stipulations, notices, or administrative actions as part of the conditions of approval (COA) for an APD or could be achieved through voluntary actions by the lessee. In general, new stipulations could only be applied to the extent that the leasing category provides for the application of stipulations. IM 2003-234 states that when processing an APD or related use authorization, lease stipulations associated with the applicable lease must be reviewed in the site-specific NEPA analysis conducted for approval of the use authorization and evaluated through ongoing project monitoring to ensure they meet current needs. If it is determined that lease stipulations are no longer effective, the BLM would consider modifications to enhance environmental protection where warranted. When reviewing lease stipulations through the use authorization/NEPA analysis process, consideration must be given to the least restrictive constraint necessary to meet the resource protection objective. Site-specific COAs attached to the approved use authorization can be used to provide more appropriate protections for the environment. COAs provide an effective means of further defining performance-based lease stipulations to accommodate current resource conditions and land uses identified through the NEPA process. If monitoring determines that resource conditions deteriorate to the threshold level contemplated in the land use plan or use authorization NEPA document, the Field Manager must take measures to mitigate further impacts.

Additional protective measures could in some cases effectively result in NSO on portions of a lease. Application of NSO for protection of a resource would preclude any development or disturbance of the land surface associated with the area where the resource is present. Thus establishment of wells or well pads or construction of roads, pipelines, or power lines would not be allowed within the area; any oil or gas extracted from the area would have to come from wells directionally drilled at an angle underground from adjacent or nearby lands.

There are a number of reasons that additional protection may be required for resources that were not anticipated when the CBGA RMP was prepared over 20 years ago. Chief among these is that the current planning documents did not anticipate the high level of commercial and residential

development of lands adjacent to the Interstate 15 (I-15) corridor and other split-estate parcels within the planning area. The level of private surface development activity in this general area suggests that additional residential development adjacent to the I-15 corridor can be expected within the next 10-year leasing period. Another reason for the need for additional resource protection is changing management strategies and goals for certain wildlife species. For instance, with increasing development in the CCFO planning area, conflicts between wildlife and humans can increase, resulting in a loss of habitat for wildlife and the need for additional protection requirements.

Under this alternative, additional, more restrictive stipulations could be applied to ensure compatibility between exploration and development activities and the surface utilization of existing and projected developments. The additional protective measures considered in this alternative are of three types: timing limitations, controlled surface use restrictions, and no surface occupancy restrictions. These measures provide additional protection to specific resources beyond the standard lease terms and stipulations described for the No Action alternative. A summary of the additional protective measures that are included in the analysis for the Proposed Action alternative is provided below; a brief description of the restrictions is presented in Appendix B.

| Type of Protective Measure | Resource |
|---|---|
| Timing Limitation | Crucial Winter Mule Deer and Elk Habitat<br>Crucial Elk Calving and Deer Fawning Habitat<br>Pronghorn Fawning Habitat and Winter Habitat<br>Greater Sage-Grouse Leks, Nesting, Early Brood-Rearing, and Winter Concentration Areas<br>Waterfowl<br>Southwestern Willow Flycatcher<br>Yellow-Billed Cuckoo<br>Bald Eagle Nest Sites and Winter Roost Sites<br>Ferruginous Hawk, Golden Eagle, and Peregrine Falcon Nest Sites |
| Controlled Surface Use | Greater Sage-Grouse Leks<br>Bald Eagle Nest Sites and Winter Roost Sites<br>Ferruginous Hawk, Golden Eagle, and Peregrine Falcon Nest Sites<br>Burrowing Owl Habitat<br>Raptors<br>Fisheries<br>Pygmy Rabbit<br>Utah Sensitive Species<br>Riparian Areas<br>Mexican Spotted Owl<br>Southwestern Willow Flycatcher<br>Yellow-Billed Cuckoo<br>California Condor<br>Utah Prairie Dog<br>VRM Class II Areas<br>Erodible Soils and Steep Slopes<br>Material Site Rights-Of-Way<br>Paleontological |
| No Surface Occupancy | Developed or Potential Recreation Sites<br>Water and Watershed Protection<br>Steep Slopes |

## 2.4 No Leasing Alternative

The presumption in this alternative is that the standard lease terms and stipulations implemented under the No Action alternative and the additional resource protective measures included in the Proposed Action alternative are not sufficient to protect some resources and so additional protections would be necessary. Specific resources would receive additional protection under this alternative in the form of application of a no leasing category. Under this alternative the BLM may determine that the only way to adequately protect a particular resource within a lease parcel is to not allow leasing in that area.

## 2.5 Alternatives Considered but Not Carried Forward for Analysis

The following alternatives were considered but not carried forward for detailed analysis for the reasons presented.

**Leasing with No Surface Occupancy.** NSO could be applied under the Proposed Action alternative; therefore, this alternative was not carried forward as a separate alternative. However, if NSO was needed for large areas, it would necessitate consideration of a plan amendment in the leasing category.

**Change of Leasing Categories/Decisions Requiring a Land Use Plan Amendment.** A LUP amendment is outside the scope of analysis for this EA and is not being proposed at this time. If, as a result of this analysis, additional protections are indicated that are beyond the scope of the existing leasing categories, leasing in those areas would be deferred until the amendment process was completed.

# 3.0 DESCRIPTION OF AFFECTED ENVIRONMENT

This chapter describes the environment that would be affected by implementation of the alternatives described in Chapter 2. Aspects of the affected environment described in this chapter focus on the relevant issues. Certain critical environmental components require analysis under BLM policy. Only those aspects of the affected environment that are potentially impacted are described in detail (see Appendix A).

## 3.1 General Setting

The planning area is comprised of approximately 960,000 acres of BLM-managed mineral lands in the Cedar and Beaver planning units (described on page 3-5 of the CBGA RMP; BLM 1984) located within Beaver and Iron Counties in southwestern Utah. The area's land ownership pattern is fragmented between private, state, and federally-managed lands (see Figure 1). Beaver County is 77.3 percent federal lands (2,002 square miles), 10.2 percent state lands (264 square miles), and 12.4 percent private and local government lands (321 square miles). Iron County is 57.2 percent federal lands (1,887 square miles), 6.7 percent state lands (221 square miles), 36.0 percent private and local government lands (1,187 square miles) and 0.1 percent Tribal lands (3 square miles). I-15 traverses northeasterly along the eastern portions of Beaver and Iron counties.

The area is within the Basin and Range physiographic province, which generally consists of north-south trending mountain ranges separated by broad arid valleys with interior drainage and vegetated with sagebrush and other plants typical of the Great Basin. The soil in this area consists mostly of aridisols, an iron-rich desert soil, that is used mainly for range, wildlife, and recreation. Because of the dry climate in which they are found, these soils typically are not used for agricultural production unless irrigation water is available. The valleys throughout the region contain a variety of native grasses, junipers, and pinyon pines, while xerophytic and desert scrub vegetation are common in lower and drier areas.

The climate of the area is characterized by cold winters and hot summers – average minimum temperatures are around 17°F (December – January) and average maximum temperatures are in the 90s (July). Average annual precipitation ranges from about 10 to 13 inches depending on elevation, with approximately 50 percent of the moisture coming during the period of plant growth between April and September (WRCC 2008).

The area has had a relatively long sociocultural history of resource use and development. Since the late 1800s agricultural pursuits such as farming and cattle and sheep ranching have dominated the character of the general region. More recently, however, the dominance of the agricultural sector on the economy has somewhat given way to the service sector. This is an indication of the heavy reliance of the area's economy on tourism attracted by the several national parks, monuments, and recreation areas of the region. Despite heavy visitation to the region, much of its rural western character has been retained through its small cities and towns and its large open expanses.

## 3.2 Critical Elements of the Human Environment and Other Resources Brought Forward for Analysis

Critical Elements of the Human Environment are those elements subject to requirements specified in statute, regulation, or executive order that must be considered in every EA (BLM 2006b). In addition, other resources screened for impacts (e.g., soils, vegetation, etc.) are

generally considered in EAs by the BLM. Critical elements of the human environment and other resources brought forward for analysis were identified in Section 1.4. Critical elements which are not present in the area and therefore are not addressed in this EA include Areas of Critical Environmental Concern; Threatened, Endangered or Candidate Plant Species; and Wild and Scenic Rivers. Other resources that may be present in the planning area but would not be affected (for the reasons listed in Appendix A) include Air Quality; Environmental Justice; Farmlands (Prime and Unique); Floodplains; Wastes (Hazardous or Solid); Water Quality (Drinking or Ground); Wetlands/Riparian Zones; Wilderness; Rangeland Health Standards and Guidelines; Livestock Grazing; Woodland/Forestry; Geology/Mineral Resources/Energy Production; Lands/Access; Fuels/Fire Management; and Wild Horses and Burros. The resources described in this chapter represent only those elements which could potentially be impacted by the proposed action or alternatives. This narrative describes the resources that will be analyzed in Chapter 4.

### 3.3 Cultural Resources

The NHPA, as amended in 1992 (16 USC 40 et. seq.), requires government agencies to take into account the effects of their actions on properties listed or eligible for listing on the National Register of Historic Places (NRHP). Cultural resources are defined as any evidence of past human activities. They include structures such as historic or prehistoric buildings, bridges, homesteads, canals, roads, or shipwrecks. They also include such things as art, stone tools, food remains, ceramics, glass items, tin cans, documents, and many other items that show how people lived, thought, and felt about the world around them (Stettler and Seddon 2005). Cultural resources also include places that are important to a particular group's history and traditions. These places are often called Traditional Cultural Properties (TCPs). These types of properties can be archaeological sites, such as prehistoric campsites, rock art, burials, rock shelters, lithic scatters, and village sites. They can also be non-archaeological site types such as lakes and springs, land features, and traditional gathering or collection areas (16 U.S.C. 470, Section 101 [d] [6] [a]. In accordance with law and policy, the CBGA RMP states (page 3-42) that cultural resources clearances and mitigations are required prior to construction or development on all projects involving surface disturbing activities.

The planning area – located within the eastern portion of the Great Basin culture area (D'Azevedo 1986) – holds a large and varied archeological resource, with sites reflecting occupation and use by various groups over the past 12 - 15,000 years, including: the big game hunters of the Paleoindian Period, the Archaic hunters and gatherers, the Fremont agriculturists, and, most recently, the Paiute hunters and gatherers. As such, Native American groups, particularly local groups, have expressed interest in land use planning in the area, especially if it involves ground disturbing actvities. Although several variations exist, both regionally and across the Great Basin as a whole, Jennings (1986) has developed a basic cultural chronology that fits well into this particular culture area. Jennings' cultural context, described briefly below, includes the Paleoindian, Archaic, Formative, and Late Prehistoric Periods.

**Paleoindian Period (Approximately 12,000 – 7000 B.P./5000 B.C.):** Paleoindian peoples are thought to have focused on hunting the megafauna present at the end of the Pleistocene. The typical artifacts attributed to this period include the Clovis and Folsom fluted lanceolate projectile points and the Lake Mojave lanceolate projectile points. This stage is very sparsely represented by materials and particularly by definable sites within the planning area. The majority of finds dating to this period come from surface artifact finds (Jones and Beck 1999),

including Paleoindian projectile points found on the surface within the planning area (Copeland and Fike 1988).

**Archaic Period (5000 B.C. – A.D. 300):** In the early Holocene, the megafauna became extinct and subsistence strategies adapted to the new environment. Reliance on big game hunting was replaced by a broader strategy focused on hunting and gathering of resources. Represented is a very successful transient way of life, exploiting plant and animal resources where and when they became available. The projectile points became smaller during this period, more suited for hunting smaller game, and there is an increase in the number and type of stone grinding implements used for plant and seed processing. Projectile point types are the primary chronological marker having been found in dated, stratified contexts and serve to divide the archaic into three phases: Early, Middle, and Late (Holmer 1978). However some types, such as the Elko series points, are found throughout the history of the Archaic Period. Archaic sites, particularly from the middle and late periods, are relatively abundant throughout the planning area. Almost all of the Archaic sites are characterized as "scatters" of widely varying sizes and complexities, but marked by often abundant chipped stone debris from artifact production, chipped stone artifacts (atlatl dart points, scrapers, knives, drills, blades, etc.), very often ground stone (manos and metates), and occasionally hearths, alignments, and other minor features. In the planning area, there are very few caves and rockshelters, which were generally favored as occupation sites by the Archaic people.

**Formative Period (A.D. 300 – 1200):** Near the beginning of the first millennium A.D., horticulture was introduced and adopted in portions of the Great Basin. The exact method and time of entry of cultivated crops remains a matter of debate; however, major changes in the subsistence patterns emerged in the Great Basin over the next millennium. The Fremont culture arrives in the archaeological record during this period, with evidence of a semi-sedentary lifestyle centered on horticulture, with a continued reliance on hunting and gathering (Madsen and Simms 1998). The material culture diversifies greatly with the contemporaneous introduction of pottery and the bow- and- arrow, with its associated smaller projectile points. Pit houses in sedentary villages indicate a substantial shift in subsistence strategy. Within the planning area, agricultural sites are clustered strongly along the streams issuing from the high country on the east (e.g., Parowan Front). There are also seasonal sites associated with exploitation of the natural resources of the western valleys and ranges.

**Late Prehistoric Period (A.D. 1200 – 1826):** By around A.D. 1200, an expansion of Numic-speaking peoples into the area seems to have replaced or displaced the Fremont culture (Bettinger and Baumhoff 1982). Archaeologically, the primary material culture of the Numic are Intermountain Brownware pottery and the Desert Side notched and Cottonwood Triangular arrow points. The subsistence strategy appears to shift back to one largely focused on hunting and gathering; however, there is some evidence of at least limited reliance on horticulture. The Numic-speaking peoples, including the Ute, Shoshone and Paiute, were the occupants of the Great Basin upon the initial arrival of Europeans in 1776. Sites associated with the Paiutes, who were occupying the area at the time of white contact, become definable at about the same time as the Fremont demise. Reflected is a return to a transient lifeway supported by hunting and gathering; existing sites in the planning area often appear to be clustered around springs.

**Past Findings**

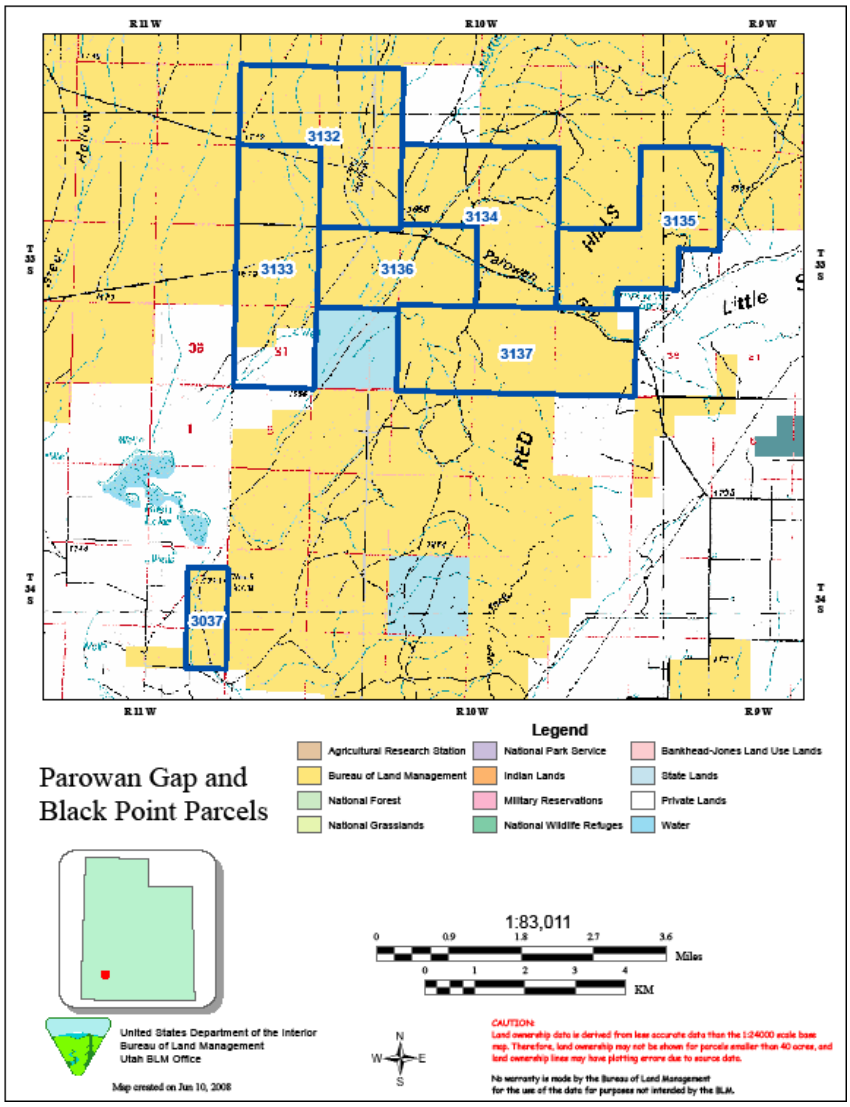
Over the past 30 years, there has been considerable inventory and data accumulation in the planning area resultant from wildland fire rehabilitation efforts, chainings and plowings, mineral exploration, transmission lines, roads, pipelines, and a variety of other small projects. Detailed information about the specific findings and regional systems, interactions, or communities is available in files/reports at the CCFO. Particularly good information is available for the Mineral Mountains area where there are big obsidian sources, from the big basalt flows south and north of Crater Knoll, along the Kern River Pipeline corridor, and on several west desert burns that involved springs – as well as another big obsidian source near the Nevada border. Recent fuels jobs, as well as big seismic programs in Beaver and Parowan Valleys, have also provided substantial data. The big projects, particularly burns, have been the best for identifying areas of high site density and/or major sites and clusters. Results of these inventories have led to the finding that archeological sites within the planning area are not scattered evenly or randomly across the landscape. Rather, they are positioned most often so as to maximize effective access to one or more resources, primarily water.

Although the planning area is on the margin of the Plateaus, it is in a Great Basin high desert regime, where water and resources are scarce and often highly localized therein serving to concentrate people - and thus sites - in certain areas. While this did not serve to keep people in an area very long or over very large areas, they did return, on some sort of recurring schedule, to more or less the same areas. The majority of the site concentrations in the planning area are low (1 to 10 sites/section) to medium density (11 to 20 sites/section). High density (21 to 30 sites/ section) and very high density (30+ sites/section) sites are not as common. Over the field office area, there are almost never high density areas that cover a full cadastral section; rather, such a density is usually projected from a cluster over a quarter section or two. It is considered that low and medium density areas are essentially leasable – with appropriate cultural safeguards and stipulations. High density areas would require close scrutiny and perhaps additional mitigation; very high density areas would likely require avoidance. While these low, medium, and high categories are presented here to provide a programmatic overview of the area, more detailed information is available and would be used on a site-specific basis to address the significance of a given site at the APD stage. Surveys would be completed at the time of APD and any cultural resources found would be avoided or mitigated.

The long used obsidian quarries at the base of the Mineral Mountains represent one of the area's important resources where large sites and areas of exceptionally high site density are present. Other concentrations are found with good waters, particularly springs, and on the big basalt flows around and north of the Crater Knoll area. Concentrations are found where there is a juxtaposition of good springs and single-leaf pinyon (although most of these are on the west side of the Field Office area). Of the locations in the planning area with known sites, the Parowan Gap is likely the most widely known with a very extensive and impressive, but highly localized concentration of rock art. The Paiute's ancestral homelands encompassed the Gap, and the Hopi recognize clan symbols among the various figures. The approximately 40-acre core area has been listed on the NRHP since 1975. The Tribes believe that the area needs to remain undisturbed to protect the integrity of the area and they have shown support for an ethnographic overview of the area and designation of a larger area that should be included in a historic district to preserve and protect all important cultural resources in the area, not just those encompassed by the National Register property. Past consultation with the Paiute Tribe of Utah as well as the Hopi Tribe has resulted in written documentation submitted to the BLM (December 6, 2006)

requesting deferral of a core area around the Parowan Gap – beyond the existing boundary – due to the presence of TCPs and sacred sites. Lands that have been deferred from leasing based on this past consultation are shown on Figure 2. The ethnographic overview will be undertaken to determine the extent of lands that need protection in addition to those shown.

**Figure 2.** Deferred parcels in the Parowan Gap and Black Point areas**.**



Overall, the inventories show that there is a substantial and important archeological resource over the planning area, including large numbers of sites, many of which can be tied to Archaic, Fremont, and Paiute occupations, and a little material from the earlier, big-game hunting periods (Clovis, Folsom, etc.). There are some large sites as well as some strong site clusters, but overall the hunters, gatherers, and Great Basin foragers provided a whole lot of "scatters" of various sorts. These are by far the most prevalent type of site, mainly reflecting transient hunting and gathering activities – such as short-term camps, seed processing sites, kill/butchering sites, lithic source procurement/production sites, and other task-specific sites – and including flake and tool scatters – fairly often with ground stone, occasionally with features such as hearths, and sometimes, in the later periods, with ceramics. For the most part, these "scatters" of one sort or another are mostly small and not dense with material, although the big obsidian sources have led to strong concentrations of sites in some areas, as have other localized resources. Rock art is not uncommon but is generally scattered and on a small scale (with a couple of notable exceptions). Sheltered sites (caves, rock overhangs) are not common at all, nor are major, long-term camps. Historic sites are quite limited in number, and most are located on patented land.

Aside from caves and rockshelters, as well as some special sites such as rock art locales, the great majority of sites, historic and prehistoric, exist out on the landscape, basically unprotected from time, weather, and projects. Mainly the sites exist at or near ground surface (seldom are open sites more than a few tens of centimeters deep), reflect some pattern from original use, may hold fragile features (hearths, ephemeral structures), and are most valuable for research and interpretation if context and relationships are intact. Thus, sites, in addition to being subject to erosion damage, are particularly vulnerable to surface-disturbing activities. Because oil and gas development has the possibility of creating an adverse effect to cultural resources, all leases issued subsequent to October 5, 2004 would include the Cultural Resources and Tribal Consultation for Fluid Minerals Leasing stipulation described in Section 2.2. Site specific cultural resource surveys and appropriate mitigation measures are required as part of the APD process after parcels are leased. Based on an MOU Concerning Communication and Cooperation between the Paiute Tribe, each of the five Bands that comprise the Tribe, and certain BLM offices (including Cedar City), the BLM will continue to notify the Tribe of any actions that might be of interest or concern to them and consultation with SHPO will continue based on the protocol developed with that office (see Chapter 5 for more details about these efforts).

### 3.4 Native American Religious Concerns

Native American Religious Concerns are incorporated into the discussion of TCPs (defined in Section 3.3); some previously examined locations in the planning area have TCPs important to maintaining the cultural identity of the Paiute and Hopi Tribes. Executive Order 13007, Indian Sacred Sites, states that in order to protect and preserve Indian religious practices, the agency with responsibility for the management of federal lands shall, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sacred sites.

It is BLM policy to consult with local Native American Tribes on all BLM actions having the potential to impact their interests. The Paiute Tribe of Utah and the Hopi Tribe were contacted regarding past proposals for oil and gas leasing in the area. Written documentation was submitted to the BLM (December 6, 2006) requesting deferral of a core area – beyond the

existing boundary – around the Parowan Gap due to the presence of TCPs and sacred sites. The Parowan Gap has been identified as a location where religious practices have historically taken place, and it is believed that some groups continue those practices today.

The Paiute's ancestral homelands encompassed the Gap and the Hopi recognize clan symbols among the Gap figures. The significance of the rock writings explains past history and is passed on to future generations. The Tribes' use of the area includes plants, animals, and the natural springs and other locations of cultural significance. They continue to pick the sage and plants for traditional uses and elders and young alike make the journey out to the Gap to visit the area and view the writings. Around the petroglyphs there are a number of cairns thought to be integral to the use of the Gap as an astronomical observatory (Norman 1996). Use of the Gap as a solar/lunar observatory would have likely included use of the area for various ceremonies, celebrations, supplications, healings, initiations, etc. indicating that a wider area than just the concentrated rock art area was of great importance.

The Tribes indicated that in order to meet agency responsibilities under the NHPA and EO 13007, areas surrounding the Gap needed to be formally evaluated as a TCP and sacred localities need to be identified. The Hopi Tribe requested that for any parcels leased, cultural resource inventories would take place before lease operations are authorized. Consultation would occur on individual lease/parcel sales and any future development and all leases issued subsequent to October 5, 2004 would include the Cultural Resources and Tribal Consultation for Fluid Minerals Leasing stipulation described in Section 2.2.

### 3.5 Threatened, Endangered or Candidate Animal Species

Under Section 7 of the ESA, the BLM is required to consult with the FWS on any proposed action which may affect federally listed threatened or endangered species or species proposed for listing. Programmatic Section 7 consultation efforts covering a wide variety of actions associated with the current BLM land use plans in Utah was completed in 2006 (BLM 2006c). Additionally, BLM and FWS personnel completed programmatic Section 7 consultation work culminating in a set of standard, species-specific lease notices for listed species that are to be attached to oil and gas leases offered in Utah. These consultation efforts resulted in a memorandum dated December 16, 2004 concurring with the BLM determination that use of the species-specific lease notices on appropriate lease parcels will result in a "may affect, but not likely to adversely affect" determination for leasing actions involving federally listed species in the state. Washington Office Instruction Memorandum No. 2002-174, Endangered Species Act Section 7 Consultation, also directs that the BLM to attach this stipulation to all leases to protect threatened and endangered species. According to this stipulation, the BLM will not approve any ground-disturbing activity until obligations under applicable requirements of the ESA have been fulfilled, including completion of any required procedure for formal or informal conference or consultation.

Although not all special status species are protected by the ESA, 43 CFR 3162.1(a) provides the BLM with broad authority to ensure compliance of lessees with orders of the authorized officer issued for the protection of the environment. Conservation measures associated with this consultation increase the likelihood that the BLM and by association, the lessee, will meet the standard of "may affect, but not likely to adversely affect" for ESA-listed species. It should be noted that BLM may be required to reinitiate Section 7 consultation at the project-level, as necessary, to ensure proper management of listed species in the future. The table below

identifies ESA-listed wildlife species with the potential to occur in the planning area. The table also includes the habitat association for those species and the presence or absence of suitable habitat for the species within the planning area.

| Species, ESA Designation*, Habitat Association, and Habitat Availability |
|---|
| **Utah prairie-dog** (*Cynomys parvidens*) (T)<br>Habitat association: Open prairies and grassland<br>Presence or absence of suitable habitat: Known occurrence |
| **California condor** (*Gymnogyps californianus*) (EXP/E)<br>Habitat association: Mountainous country at low to moderate elevations, especially rocky/brushy areas near cliffs<br>Presence or absence of suitable habitat: Known foraging habitat |
| **Southwestern willow flycatcher** (*Empidonax traillii extimus*) (E)<br>Habitat association: Riparian habitats, especially in areas of dense willow<br>Presence or absence of suitable habitat: Potential occurrence |
| **Mexican spotted owl** (*Strix occidentalis*) (T)<br>Habitat association: Various forest types and steep rocky canyons<br>Presence or absence of suitable habitat: Known occurrence |
| **Yellow-billed cuckoo** (*Coccyzus americanus*) (C)<br>Habitat association: Riparian habitat<br>Presence or absence of suitable habitat: Limited habitat |

***E - Endangered; T - Threatened; EXP - Experimental, non-essential; C - Candidate.

**Utah prairie dog**

The Utah prairie dog was federally-listed as endangered in 1973 (38 FR 14678) and down-listed to threatened in 1984 (49 FR 22330). The species' range is limited to southwestern Utah and is the most restricted of all prairie dog species in the United States. Historically, Utah prairie dog colonies were found as far west as Pine and Buckskin Valleys in Beaver and Iron Counties, and may have occurred as far north as Nephi, Utah, southeast to Bryce Canyon National Park, east to the foothills of the Aquarius Plateau, and south to the northern borders of Kane and Washington Counties. A 50 percent range reduction was estimated from 1925 to 1975, with the greatest declines occurring in the western and northern parts of the range. Factors that resulted in the historical decline of Utah prairie dogs were poisoning, drought, habitat alteration, shooting, and disease (72 FR 7843). This species is limited to nine counties in southern and central Utah, including Iron, Beaver, Garfield, Piute, Wayne, Sevier, Kane, Millard, and Sanpete between 5,100 and 9,000 feet elevation. BLM lands, particularly within the planning area, contain some of the most important habitat of the Utah prairie dog's range.

Utah prairie dogs are typically restricted to relatively open plant communities with short-stature vegetation such as alfalfa fields and feed on a variety of grasses and forbs. Utah prairie dogs generally begin breeding in March; the young are born in April and the juveniles appear aboveground in early to mid-May. Prairie dogs are among the most social of animals and live together in large groups called colonies or towns. Most colonies are located in well-drained soils and have numerous burrows with a network of entrances. Several species are associated with or considered to be dependent on prairie dogs and their colonies and because of this they are considered to be a keystone species (Kotliar et al. 1999, Kotliar 2000). The Utah prairie dog occurs in 23 mapped complexes throughout the CCFO, representing some 16,000 acres of potential, but not necessarily suitable, habitat including areas within the planning area. The maps within the CBGA RMP identified specific lands that were known at that time to be occupied by Utah prairie dog. These lands were identified as Category 3 lands (open to leasing

subject to NSO). Since that time new data has identified additional lands occupied by the Utah prairie dog, either unknown colonies at the time or new colonies that have been established by migration or translocation. The Utah prairie dog inventory areas associated with the Iron County Habitat Conservation Plan (HCP) show those areas where Utah prairie dog or their sign have been mapped since 1976, plus a buffer that encompasses an estimate of home range, disturbances distance, and mapping error (ICC and UDWR 1998).

In 2003, the FWS was petitioned to reclassify the Utah prairie dog as an endangered species under the ESA based on their decline in both numbers and sizes of populations since the early part of the 20th century. The petition stated that historic prairie dog habitat loss had occurred from brush encroachment and conversion of native ecosystems to crop agriculture and municipal development and that ongoing habitat loss and the poor quality of the remaining habitat continued to jeopardize the Utah prairie dog (Forest Guardians 2003). The petitioners asserted that a lack of suitable habitat on public lands is likely the most important factor limiting prairie dog recovery (McDonald 1993; McDonald and Bonebrake 1994; Utah Prairie Dog Recovery Implementation Team 1997).

In their finding on the petition, the FWS announced that there was not substantial scientific or commercial information available that indicated reclassification was warranted (72 FR 7843). The FWS stated that while Utah prairie dog recovery has been slow, actions taken since 1994, including research, development of new guidance documents, implementation of the 1997 Interim Conservation Strategy on Federal lands occupied by prairie dogs, and the revision of the Recovery Plan to include the conservation of prairie dog habitat on private lands, will improve the species' status over the long-term. They stated that although past translocation efforts have not always been successful, techniques and vegetation guidelines have been adapted to address the likely causes preventing success of past efforts and that 13 new complexes have been established on Federal lands within the West Desert Recovery Area as a result of these efforts. The FWS continues to monitor these efforts and update methods as necessary resulting in new recommended translocation procedures for the Utah Prairie Dog (FWS 2006, 18 pp.).

**California condor**

The California condor was listed as an endangered species on March 11, 1967 (32 FR 4001) and an experimental, non-essential population was designated in portions of Arizona, Nevada, and Utah in 1996 (61 FR 54043). Interstate 15 in Iron and Beaver Counties forms the western boundary of the experimental population area, while I-70 forms the north boundary. California condors that occur east of I-15 are part of the experimental, nonessential population, and condors found west of I-15 are managed as an endangered species.

Historically the California condor occurred along the Pacific Coast from Baja California north to southern British Columbia, but by the 1930s only about 60 condors remained in six counties in southern California (FWS 1984). Primary causes for condor decline were lead poisoning, shooting, collisions with manmade structures, and loss of habitat. California condors are opportunistic scavengers, feeding only on the carcasses of dead animals, and are capable of flying more than 100 miles in a day in search of carrion. California condors require suitable habitat for nesting, roosting, and foraging. Nest sites are located in cavities in cliffs, in large rock outcrops, or in large trees. Traditional roosting sites include cliffs or large trees, often near feeding sites, and foraging occurs mostly in grasslands.

Approximately 90 condors have been released at two sites in northern Arizona since 1996, with about 60 surviving in the wild. Most of these birds inhabit the Colorado River drainage from the City of Page downstream to the upper end of Lake Mead, but several condors venture into Utah on a regular basis. Most of the condor excursions to Utah are to Kane, Garfield, and Washington Counties, but visits to Iron County have increased. A large segment of the reintroduced population spends the summer in Utah, and has been observed roosting just south of the planning area near Kolob Reservoir. Individuals are known to periodically forage throughout the southern portions of the planning area; however, no known roost or nest sites are known at this time.

**Southwestern willow flycatcher**

The southwest willow flycatcher was listed as an endangered species in 1995 (70 FR 60885). The breeding range of southwestern willow flycatcher includes southern California, southern Nevada, southern Utah, Arizona, New Mexico, western Texas, and northern Baja California, Mexico. The current range for this species in Utah includes all of Washington, Kane, and San Juan Counties, southern Iron County, and most of Garfield, Wayne, Emery, and Grand Counties (FWS 2003).

Southwestern willow flycatchers are insectivores that forage on the wing above and within riparian vegetation. These birds breed in dense riparian habitats along rivers, streams, or other wetlands and near surface water or saturated soils (Sogge et al. 1993). The southwestern willow flycatcher breeding season is from late May to early August. Egg laying occurs from late May to late June, while fledging occurs from late June to early August. Preferred southwestern willow flycatcher nesting habitat consists of dense willows, 10 to 22 feet in height, often with an overstory of cottonwood or other native broadleaf trees, with a very dense foliage structure in the lower 6 feet (Sogge et al. 1997). In areas lacking dense stands of willow habitat, southwestern willow flycatchers use dense stands of exotic saltcedar or Russian olive, 12 to 30 feet in height, or mixed stands of saltcedar, Russian olive, willow, and cottonwoods. Riparian patches used by breeding willow flycatchers vary in size from approximately one acre to several hundred acres, while patch shapes vary from broad to linear, but they have not been documented nesting in linear riparian habitats less than 30 feet in width (Sogge et al. 1997).

Presently, the only documented nesting sites in Utah occur in Washington County (70 FR 60885). This species is not known from the planning area.

**Mexican spotted owl**

The Mexican spotted owl was listed as threatened on March 16, 1993, due to loss, modification, and fragmentation of habitat from timber harvest, fire, recreation activities, road and trail building, and livestock grazing (58 FR 14248). A recovery plan was signed on October 16, 1995 (FWS 1995). Critical habitat for this species was designated on February 1, 2001, and includes 5,363 acres of BLM-managed land in the CCFO within Iron County in Critical Habitat Unit CP-11 (66 FR 8530). Mexican spotted owl occurs from northern Mexico to the north through Arizona and New Mexico to southwestern Colorado and southern Utah.

Mexican spotted owls nest, roost, and forage in a variety of habitats. Mixed-conifer forests are commonly used throughout most of the range but in the northern part of the range, including southern Utah, owls occur primarily in rocky canyons. In Utah, they are found primarily on the Colorado Plateau where they inhabit deep, steep-walled canyons. These canyons often have a much cooler microclimate that supports uneven-aged, multi-layered stands of mixed-conifer trees, particularly Douglas fir, white fir, and ponderosa pine, with an understory of deciduous

broad-leaved trees such as maple, Gambel oak, box elder, and aspen. Upland vegetation types adjacent to these canyons are usually pinyon-juniper or mountain shrub. Mexican spotted owls are also found in Utah on steep north-facing slopes that have stands of mixed-conifers. Small populations of spotted owls are scattered across southern Utah where suitable habitat is found in locations such as Zion, Canyonlands, and Capitol Reef National Parks.

Potentially suitable spotted owl habitat, as defined in the Mexican Spotted Owl Recovery Plan (BLM 2006d), occurs on BLM-managed lands in Iron County east of I-15 from Zion National Park north to Parowan Canyon. This habitat was identified from several sources including rangeland and riparian inventories, raptor surveys, and David Willey's 1997 and 2000 GIS predictive models that used GAP vegetation, slope, aspect, elevation, and thermal intensity and duration data. Sites containing potentially suitable spotted owl habitat, generally mixed conifer or steep north-facing slopes, were identified and field checked for habitat suitability and subsequently inventoried for spotted owl. The 2006 *Biological Assessment of Livestock Grazing in Bald Eagle, Mexican Spotted Owl, Southwestern Willow Flycatcher, California Condor, and Western Yellow-Billed Cuckoo Habitat on Bureau Of Land Management Lands, Beaver and Iron Counties, Utah* contains the results of the surveys. The inventories found a pair of Mexican spotted owls in the Spring Creek Canyon Wilderness Study Area, located on the north boundary of Zion National Park in the CCFO, in June 1991. Eight additional sites in six BLM grazing allotments in Iron County were surveyed for spotted owl in 1995 and 1996, with a single male found in Parowan Canyon in June 1996. Additional surveys were conducted in Parowan Canyon in 1999 and 2000, but no spotted owls were found. Additional potential habitat was inspected and inventoried in Iron County in 2005 and 2006, but no Mexican spotted owls were found at that time. Although there are a few additional sightings of Mexican spotted owls in Iron County since then, there are no known records of them in Beaver County or the Great Basin portion of the CCFO.

**Yellow-billed cuckoo**

Yellow-billed cuckoo was listed as a candidate species in the western Continental United States on July 25, 2001 (66 FR 38611). The breeding range of yellow-billed cuckoo formerly included most of North America from southern Canada to northern Mexico. Historically, the western population of yellow-billed cuckoo occurred west of the Continental Divide from southern British Columbia to northern Mexico, but now its range is greatly restricted to scattered blocks of riparian habitat from central California and southern Idaho south to Mexico. In Utah, cuckoos were formerly uncommon to rare summer residents (June to August) along river bottoms statewide, but their range has been reduced to a few scattered sites, mainly along the Green and Colorado Rivers (UDWR 2008a). Habitat for this species has been lost to agricultural and urban development, water diversions, dams, river channelization, floods, fire, livestock grazing, off-road vehicles and other recreational uses, and replacement of native riparian habitats with non-native plants, particularly saltcedar (UDWR 2008a).

Yellow-billed cuckoos utilize large tracts of riparian habitat (greater than 25 acres) dominated by mature cottonwoods with a dense understory of willows, for nesting and foraging. This species prefers to nest in open woodlands with an understory of dense vegetation, often near streams, rivers or lakes. In the desert southwest, nesting habitat is consistently riparian woodlands, particularly those with an undamaged (i.e., ungrazed) understory, likely because of the lack of dense vegetation away from water. Nesting occurs from late June to mid-July.

There are a few sight records of yellow-billed cuckoo from Iron County between mid-June and late August, but no nesting records. There are no known records from Beaver County. Most riparian habitat on BLM-managed lands in the CCFO lacks the required cottonwood overstory and willow understory and is therefore not suitable cuckoo habitat. Six riparian areas in the CCFO having a combination of a cottonwood overstory and a willow understory were inventoried in 1997 and 1998 for potentially suitable cuckoo habitat (BLM unpublished data). No cuckoos were located at any of these sites during the surveys. All of those sites had narrower riparian widths, smaller acreage, and shorter canopy heights than are normally used by cuckoos.

### 3.6 Fish and Wildlife, Including Special Status Animal Species other than FWS Candidate or Listed Species (e.g., Migratory Birds)

**General Wildlife**

The foothills and mountain slopes in the planning area contain vegetation that provides habitat for a variety of wildlife species including the golden eagle, red-tailed hawk, gray flycatcher, juniper titmouse, scrub jay, pinyon jay, olive-sided and ash-throated flycatchers, mountain bluebird, green-tailed towhee, wild turkey, rainbow, cutthroat, and brown trout, mule deer, pronghorn antelope, and elk. Common species at higher elevations include the western and mountain bluebird, sharp-shinned and Cooper's hawks, golden eagle, Steller's jay, Clark's nutcracker, red-breasted nuthatch, three-toed woodpecker, mountain chickadee, wild turkey, mule deer, and elk. The higher elevation habitats represent a relatively small proportion of BLM-managed land but support a variety of species not commonly found in other areas of the planning area; these areas function as important summer range for mule deer and elk and also are important to many migratory bird species.

The alluvial slopes and valley bottoms contain semi-desert and desert vegetation types (salt-desert shrub vegetative community) that provide habitat for a variety of wildlife species including the American kestrel, red-tailed hawk, loggerhead shrike, horned lark, Western meadowlark, sage thrasher, Brewer's sparrow, sage sparrow, black-throated sparrow, lark sparrow, sagebrush lizard, mule deer, pronghorn antelope, badger, coyote, black-tailed jackrabbit, and elk. Many reptile species can also be found in this vegetation type. This habitat type functions as critical habitat for wintering big game herds that are forced into the valleys during the winter months. Uplands provide critical thermal- and hiding cover, while the lower elevation areas provide the forage necessary to sustain the wintering herds. These areas are also important to many migratory non-game bird species.

The past 100 years of fire suppression and livestock management have altered the role of fire in the ecosystem (Wright et al. 1979; Tausch et al. 1981). Subsequently there has been an increasing trend towards an expansion of the pinyon and juniper woodland into areas once dominated by sagebrush / grasslands, and an increase in annual weeds and grasses such as cheatgrass (Miller and Rose, 1999). Many species considered obligates (e.g., greater sage-grouse and pygmy rabbit) to healthy sagebrush ecosystems have experienced declines in numbers and distribution as a result of pinyon and juniper woodland expansion.

Riparian/wetland areas provide important forage, water, shade, and cover for a variety of wildlife, including elk, mule deer, wild turkey, and many species of migratory birds. Riparian/wetland areas are important for wildlife because these sites are rare in the planning area and many animals depend on them for water, forage, and cover. Riparian habitat is used by mule deer and wild turkeys in winter as forage and cover, by nongame migratory birds and waterfowl

as migration and nesting habitat, and by small mammals, lizards, and amphibians as year long habitat. Big game species also utilize these areas extensively, especially during the dry summer months. Riparian and wetlands are critical for many songbird and wetland bird species as they provide the food sources and resting areas necessary to sustain the birds during the spring and fall migration seasons. Rainbow, cutthroat, and brown trout are found in streams in the area.

Portions of the planning area contain crucial winter range for big game. The UDWR has mapped elk and mule deer crucial use areas in Utah and identified areas of crucial value habitat and areas of substantial value habitat. UDWR defines crucial value as "habitat on which the local population of a wildlife species depends for survival because there are no alternative ranges or habitats available" and "...essential to the life history requirements of a wildlife species." They further state that degradation or unavailability of crucial habitat will lead to declines in carrying capacity and/or numbers of wildlife species in question. UDWR defines substantial value as "habitat that is used by a wildlife species but is not crucial for population survival." Unlike crucial habitat, degradation or unavailability of substantial value habitat will not lead to declines in carrying capacity and/or numbers of the wildlife species in question (UDWR Metadata for Shapefile mude20060701).

Rocky Mountain elk are common in most mountainous regions of Utah, where they can be found in mountain meadows and forests during the summer and foothills and valley grasslands during the winter. Critical value winter habitat for elk has been mapped in the planning area in the foothills east of I-15 in the Cedar Mountains and Dixie National Forest and high value habitat has been mapped in many of the hilly/mountainous areas within the planning area including the Black Mountains, Harmony Mountains, and Antelope Range areas. Elk could be present in these areas throughout the year, but more commonly use the area in the late summer, fall and winter months and retreat to higher elevations during the late spring and summer months until the high mountain ranges dry out. A few, smaller herds of elk spend the entire year on BLM lands using high desert habitats including the Escalante Desert area.

Mule deer are common throughout Utah, where they can be found in habitats ranging from open deserts to high mountains to urban areas. Mule deer often migrate from high mountainous areas in the summer to lower elevations in the winter to avoid deep snow. Mule deer critical value winter range habitat has been mapped within the planning area and includes much of the lower elevation foothill and bench habitat in the planning area. Sagebrush is a key component of this winter range, providing a feed source when other plants are not available. The most important winter range in the planning area occurs east of I-15 and additional winter range occurs within a 20-mile corridor west of I-15 through all of Beaver County and the northern half of Iron County. Mule deer may start moving onto winter ranges as early as October, but typically the most critical period is December to March when the temperatures are usually the coldest and the snow the deepest.

Mule deer crucial value summer habitat has also been mapped in the planning area by UDWR. The majority occurs in the mountainous areas east of the planning area with segments of crucial summer habitat occurring in the Mineral Mountains and Bald Hills. These herds are on BLM lands year round. These areas include fir and spruce, pinyon pine-juniper woodlands and high elevation sagebrush habitat. Migrating individuals could arrive in the planning area in September, depending on the year.

There is no designated critical fawning or wintering pronghorn antelope habitat within the planning area, although several pronghorn herds occur in the area. The closest designated habitat is located east of the planning area covered in this EA in the Antimony Planning Area.

Diversity of endemic plants – those that are unique to an area and are not naturally found elsewhere – is high in southeastern Utah and likely plays a role in fostering the endemism of other taxa such as bees (Griswold et al. 1997). Bees are important pollinators of native ecosystems and many species have specialized foraging habits that may restrict pollen collection to a single family or genus of plants. These species play an important role in pollinating endemic plants and localized desirable species of vegetation and could potentially be affected by the proposed action and alternatives.

**Sensitive Animal Species**

BLM manages sensitive species in accordance with BLM Manual 6840; included in this category are state-listed species and federal candidate species which receive no special protections under the ESA. There are 26 state-listed sensitive species identified as occurring or potentially occurring within the planning area. The CCFO has mapped potential habitats for those species which have readily defined habitat characteristics; this information would be used to determine if potential lease parcels fall within known special status species' habitats.

Of the 26 species, four were found to have no habitat or to have been extirpated from Beaver and Iron Counties (i.e., brown (grizzly) bear (*Ursus arctos*), common chuckwalla (*Sauromalus ater*), least chub (*Iotichthys phlegethontis*), and leatherside chub (*Gila copei*)). Three other species are migratory species and were identified as unlikely to occur within the area, except when migrating (i.e., Lewis's woodpecker (*Melanerpes lewis*), black swift (*Cypseloides niger*), and American white pelican (*Pelecanus erythrorhynchos*)). Therefore, these species will not be discussed in detail in this EA; however the protection of possible habitat types used by these species will be discussed for other species more likely to occur within the area and thus potential impacts would be the same for these and other species likely to use similar habitats. Additionally, a Western red bat was documented by remote passive monitoring techniques within the Beaver County portion of the project area in 2007.

Species protections, such as important seasonal timing restrictions and riparian buffers, are important in minimizing impacts to sensitive species. To comply with BLM policy 6840 for Utah BLM State Sensitive Species, lease notices are attached to appropriate parcels when sensitive species or important, associated habitats are known to occur within the immediate area. The sensitive species that occur within the planning area are primarily found within one of three main habitat types: sagebrush grasslands, forested/woodland habitat, and shorelines of open water/riparian areas/flowing streams. The sensitive wildlife species are briefly discussed below in the context of the habitat type in which they would occur.

| **BLM Sensitive Animal Species, Habitat Association, and Habitat Availability** |
|---|
| **Mammals** |
| **Big free-tailed bat** (*Nyctinomops macrotis*)<br>Habitat association: Rocky and woodland habitats, where roosting occurs in caves, mines, old buildings, and rock crevices<br>Presence or absence of suitable habitat: Known occurrence |
| **Dark kangaroo mouse** (*Microdipodops megacephalus*) |

| BLM Sensitive Animal Species, Habitat Association, and Habitat Availability |
|---|
| Habitat association: Sagebrush areas with sandy soils. Based on distribution maps not likely to occur in the planning area.<br>Presence or absence of suitable habitat: Known occurrence |
| **Fringed myotis** (*Myotis thysanodes*)<br>Habitat association: Inhabits caves, mines, and buildings, most often in desert and woodland areas. UDWR map shows no critical habitat in the counties<br>Presence or absence of suitable habitat: Known occurrence |
| **Kit fox** (*Vulpes macrotis*)<br>Habitat association: Occurs in open prairie, plains, and desert habitats<br>Presence or absence of suitable habitat: Known occurrence |
| **Pygmy rabbit** (*Brachylagus idahoensis*)<br>Habitat association: Prefers areas with tall dense sagebrush and loose soils<br>Presence or absence of suitable habitat: Known occurrence |
| **Spotted bat** (*Euderma maculatum*)<br>Habitat association: Deserts to forested mountains; they roost and hibernate in caves and rock crevices<br>Presence or absence of suitable habitat: Known occurrence |
| **Townsend's big-eared bat** (*Corynorhinus townsendii*)<br>Habitat association: Forested areas, caves, mines, and buildings<br>Presence or absence of suitable habitat: Known occurrence |
| **Birds** |
| **American white pelican** (*Pelecanus erythrorhynchos*)<br>Habitat association: Migratory species found in open water.<br>Presence or absence of suitable habitat: Migrant |
| **Bald eagle** (*Haliaeetus leucocephalus*)<br>Habitat association: Shorelines and forested woodlands, valleys during the winter<br>Presence or absence of suitable habitat: Known occurrence |
| **Black swift** (*Cypseloides niger*)<br>Habitat association: Require waterfalls for nesting; typically the falls are permanent. Nesting sites are typically surrounded by coniferous forests, and nest sites may include mountain shrub, aspen, or even alpine components. Streams that create the waterfalls are typically in mountain riparian habitats.<br>Presence or absence of suitable habitat: Unlikely migrant |
| **Burrowing owl** (*Athene cunicularia*)<br>Habitat association: Open grassland and prairies, nest in mammal burrow, usually that of a prairie dog, ground squirrel, badger, or armadillo; if a mammal burrow is not available the owls will sometimes excavate their own nest burrow.<br>Presence or absence of suitable habitat: Known occurrence |
| **Ferruginous hawk** (*Buteo regalis*)<br>Habitat association: Flat and rolling terrain in grassland or shrub steppe. Winter habitat is open farmlands, grasslands, deserts, and other arid regions where lagomorphs, prairie dogs, or other major prey items are present.<br>Presence or absence of suitable habitat: Known occurrence |
| **Greater sage-grouse** (*Centrocercus urophasianus*)<br>Habitat association: Sagebrush plains, foothills, and mountain valleys. Sagebrush is the predominant plant in quality habitat. A good understory of grasses and forbs, and associated wet meadow areas, are essential for optimum habitat.<br>Presence or absence of suitable habitat: Known occurrence |
| **Lewis's woodpecker** (*Melanerpes lewis*)<br>Habitat association: Open park-like ponderosa pine forests.<br>Presence or absence of suitable habitat: Unlikely to occur |
| **Long-billed curlew** (*Numenius americanus*)<br>Habitat association: Shorelines and open water.<br>Presence or absence of suitable habitat: Known occurrence |

| BLM Sensitive Animal Species, Habitat Association, and Habitat Availability |
|---|
| **Northern goshawk** (*Accipiter gentilis*)<br>Habitat association: Mature mountain forest and riparian zone habitats.<br>Presence or absence of suitable habitat: Known occurrence |
| **Short-eared owl** (*Asio flammeus*)<br>Habitat association: Grasslands, shrublands, and other open habitats.<br>Presence or absence of suitable habitat: Known occurrence |
| **Three-toed woodpecker** (*Picoides tridactylus*)<br>Habitat association: Engelmann spruce, sub-alpine fir, Douglas fir, grand fir, ponderosa pine, tamarack, aspen, and lodgepole pine forests.<br>Presence or absence of suitable habitat: Potential habitat |
| **Amphibians and Mollusks** |
| **Arizona toad** (*Bufo microscaphus*)<br>Habitat association: Streams, washes, irrigated crop lands, reservoirs, and uplands adjacent to water.<br>Presence or absence of suitable habitat: Potential habitat |
| **Western toad** (*Bufo boreas*)<br>Habitat association: Slow moving streams, wetlands, desert springs, ponds, lakes, meadows, and woodlands.<br>Presence or absence of suitable habitat: Potential habitat Eastern Beaver County along mountain range |
| **Brian head mountainsnail** (*Oreohelix parawanensis*)<br>Habitat association: Species occurs as a single, localized population known only from near the summit of Brian Head Peak in Iron County.<br>Presence or absence of suitable habitat: Potential habitat |
| **Fish** |
| **Bonneville cutthroat trout** (*Oncorhynchus clarkii utah*)<br>Habitat association: High-elevation mountain streams and lakes to low-elevation grassland streams.<br>Presence or absence of suitable habitat: Potential habitat |

## Sagebrush Grassland Habitat

Sagebrush grasslands comprise the primary habitat present within the field office; the sensitive species of concern for the field office that occur within this habitat type include greater sage-grouse, pygmy rabbit, dark kangaroo mouse, burrowing owl, and raptor species (e.g., ferruginous hawk and northern goshawk).

**Greater sage-grouse** are widely considered in scientific and public policy arenas to be a species of significant conservation concern; the FWS published a Notice of Initiation of Status Review for the Greater Sage-Grouse as Threatened or Endangered in the Federal Register on February 26, 2008 (73 FR 10218) to determine if the species should be protected under the ESA throughout its range or any significant portion of its range. Greater sage-grouse are upland game birds that are entirely dependent on sagebrush communities for all stages of their life cycle, with extensive areas of this habitat type required year-round. Sage-grouse have a high fidelity to their seasonal habitats (breeding/nesting, late brood-rearing, and wintering habitats), and females commonly return to the same areas to nest each year. In this area of southern Utah, breeding activities occur from mid-February to mid-May. UDWR sage-grouse mapping identifies 11 known sage-grouse leks, 329,219 acres of brood-rearing habitat, and 5,448 acres of winter habitat on BLM-managed lands within the planning area. Most sage-grouse nests are located under sagebrush plants that provide overhead cover, with 15 to 30 percent canopy cover preferred. Late brood-rearing habitats, used from summer into fall, usually have less dense sagebrush canopy than nesting habitats and generally have a higher proportion of grasses and

forbs in the understory. Riparian meadows, springs, and streams are also used during this time, especially in dry years, as these areas produce the forbs and insects necessary for juvenile birds. Because the diet of chicks consists of forbs and insects, diverse plant communities with abundant insect populations are especially important. During winter, sage-grouse feed almost exclusively on sagebrush leaves and buds, so exposure above the snow, rather than canopy cover, is critical (BLM 2003).

Loss, degradation and fragmentation of important sagebrush grassland habitats have negatively impacted sage-grouse populations, with declines estimated to be as high as 86 percent (69 FR 21484). In some portions of its range this habitat loss can be attributed to oil and gas development (Connelly et al. 2004). Construction of associated facilities, roads, and powerlines, as well as noise and increased human activities associated with energy development, can lead to fragmentation of sage-grouse habitats (Braun 1998; Connelly et al. 2000) as well as habitat for other sagebrush obligates (Braun et al. 2002).

In 2004, BLM issued IM 2004-057, *Statement of Policy Regarding Sage-Grouse Definitions And Use of Protective Stipulations and Conditions of Approval*, which examines the history of scientific thought regarding protection for habitat, leks and nesting areas and pursues a site-specific policy for sage grouse management which maintains minimum requirements for buffers, diurnal timing limitations, and seasonal restrictions. Research on the distribution of nests relative to leks and on the timing of nesting indicates that timing stipulations to protect nesting hens and their habitat should be in place from March through June in mapped breeding habitat or (when nesting habitat has not been mapped) within 4 miles of active lek sites (Moynahan 2004, Holloran et al. 2005, Colorado Greater Sage-Grouse Conservation Plan Steering Committee 2008). Doherty et al. (2008) recommend that NSO should also be applied to important wintering habitats.

The most severe negative impacts on sage-grouse populations appear to be related to full field energy development (Lyon and Anderson 2003, Holloran 2005, Kaiser 2006, Holloran et al. 2007, Aldridge and Boyce 2007, Walker et a1. 2007, Doherty et al. 2008) with research indicating that oil or gas development exceeding approximately 1 well pad per square mile with the associated infrastructure, results in calculable impacts on breeding populations, as measured by the number of male sage-grouse attending leks (Holloran 2005, Naugle et al. 2006a). Walker et al. (2007) indicate that in areas with full development, the 0.25-mile buffer lease stipulation is insufficient to adequately conserve breeding sage-grouse populations but that NSO buffers can increase the likelihood of maintaining the distribution and abundance of grouse and should increase the likelihood of successful restoration following energy development.

Research in Wyoming and Montana (Holloran 2005, Naugle et al. 2006a) indicates that current BLM stipulations to protect greater sage-grouse, including 0.25 mile radius lek buffers are not protecting leks as expected in areas of significant energy development. Holloran (2005) found that greater sage-grouse habitat protection stipulations are inadequate to protect sage grouse at large scales and high levels of development with observed declines in lek attendance at higher densities of gas development. Naugle et al. (2006a) report that impacts on lek attendance began to occur at surface spacings at or above 1 well pad per 640 acres, and those impacts became significant between 1 well pad per 320 acres, and 1 well pad per 160 acres. Naugle et al. (2006b) also found that the presence of development affected use of winter ranges by greater sage-grouse.

**Pygmy rabbit** are found in the western – primarily northwestern – United States (UDWR 2008b). In 2005, the FWS issued a negative finding on a petition to list the pygmy rabbit as threatened or endangered under the ESA (70 FR 29253). In January 8, 2008 the FWS issued a finding on a new petition stating that it presents substantial scientific or commercial information indicating that listing the pygmy rabbit may be warranted (73 FR 1312). This species has experienced severe population declines throughout the Great Basin and adjacent intermountain areas (Janson 2002; Flinders 1999). These declines have primarily occurred due to anthropogenic disturbances (e.g., habitat fragmentation, increased fire frequency, overgrazing) currently impacting the sagebrush-steppe habitat type (Heady and Laundre 2005).

The species can be found in northern and western Utah, where it prefers areas with tall, dense sagebrush and loose soils. Pygmy rabbit primarily eat sagebrush, but their diet also consists of other vegetation. Much of the habitat in the Cedar City area had been altered and reduced, and recreation, housing development, and other human uses were encroaching on much of what remained (Janson 2002). The habitat in the planning area is somewhat atypical for this species in that patches of tall sagebrush on sites with deep soils where this species is usually found are limited; however, these habitats are known to occur on BLM-managed lands within the planning area and pygmy rabbits are found in a few sagebrush areas in Iron County. There are approximately 685,500 acres of potential pygmy rabbit habitat within the planning area. Numerous burrow complexes with current or recent activity have been found in the Hamlin Valley located on the Utah-Nevada border in Iron and Beaver County – an area that may provide a critical habitat corridor between Utah and Nevada populations as evidence of use has been found for several miles on both sides of the border (Flinders 2007).

In general, occupied pygmy rabbit habitat includes tall, dense stands of big sagebrush that provide critical food and cover for the species. Horizontal obscurity in occupied habitat was observed to be greater and more divergent, moving from low to high readings indicative of an increased vegetative structure in the upper part of shrubs in more heavily occupied areas. Disturbance in these areas that reduce the height, density, or cover of sagebrush are likely to negatively affect pygmy rabbits and reduce available habitat in the short term. Although pygmy rabbits do also use edge habitats, this use is restricted to the narrow band of sagebrush adjacent to big sagebrush (Flinders et al. 2008). Flinders et al. (2008) makes recommendations for preservation of existing pygmy rabbit habitat; the presence of pygmy rabbit burrows identifies the suitable soils, vegetation and slopes that best satisfy some of the critical habitat requirements of this species. Recommendations include: leaving long and wide swaths of undisturbed mature big sagebrush to reduce the amount of area within the treatment area that pygmy rabbits would avoid while maintaining corridors of connectivity between all residual stands of big sagebrush.

**Dark kangaroo mouse** occurs primarily in the Great Basin ecoregion of the western United States. In Utah, the species occurs in the West Desert, typically in sagebrush areas with sandy soils. Dark kangaroo mice are nocturnal and are primarily active during warm weather, remaining in underground burrows during the day and during the cold winter months. A new colony of dark kangaroo mice has been documented in sand dune habitat in Iron County. This extends the range of the species further south than previously documented locations (UDWR 2008c).

**Burrowing owl** habitat includes open grasslands, especially prairie, plains and savannas and sometimes open areas such as vacant lots near human habitation or airports. Burrowing owls are potential summer-time residents in the planning area. The *Utah Field Office Guidelines for*

*Raptor Protection from Human and Land Use Disturbances* (Romin and Muck 2002) identify March through August as the key nesting and reproduction period for this species, although individuals may remain into September before migrating. They typically nest and roost in burrows dug by mammals, specifically Utah prairie dog or ground squirrels. Burrowing owls spend much of their time on the ground or on low perches, such as fence posts or dirt mounds. Burrowing owls are known to occur within the CCFO.

**Raptors**, including the ferruginous hawk, red-tailed hawk, rough-legged hawk, Cooper's hawk, sharp-shinned hawk, kestrel, northern harrier, great horned owl, golden eagle, and a few other less common species utilize each of the habitat types within the planning area and may be present year round or for certain times of the year. Bald eagles, delisted by the FWS in 2007, have been documented as occurring within the planning area. These individuals are migratory and generally use the area during the winter months. However, a pair did nest in Iron County in 2007. Although no longer protected under ESA, bald eagles remain protected under the Bald Eagle Protection Act of 1940 (16 USC 668-668d, 54 Stat. 250).

Because of the variety of raptor species present in the planning area, all habitat types are used including fields, sagebrush steppe, and pinyon pine-juniper woodlands. Nesting tends to be concentrated around cliffs, large trees, embankments, and other habitat features. The FWS has developed the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* (Romin and Muck 2002) which outlines appropriate guidelines for spatial and seasonal buffers to protect nesting raptors. Seasonal buffers restrict activity within the spatial buffer around nest sites beginning as early as December 1 for great-horned owls, January 1 for golden eagles, February 1 for peregrine falcon, and March or April 1 for other diurnal raptors, depending on the species. The seasonal buffers remain in effect until early to late August, depending on the species, or until an occupied nest becomes unoccupied at the end of the post-fledging nest dependency period. In addition to the raptor protection guidelines, a number of best management practices (BMPs) and other timing limitations and controlled surface measures are practiced to protect raptor species.

**Forested Woodland Habitat**

There are four BLM-sensitive bat and three bird species with the potential to occur in forested/woodland habitat in the planning area. The bat species – big free-tailed bat, Townsend's big-eared bat, spotted bat, and fringed myotis – occur in a wide variety of habitats ranging from the forested/woodland to desert habitat, but rely heavily on areas with caves, mines, rock crevices, and buildings where they can roost. These species occur most prevalently around areas with riparian or open water habitat close by that provides foraging habitat. These habitat types occur primarily along the eastern boundary of the planning area and also in the Mineral Mountains.

The Lewis's woodpecker and three-toed woodpecker occur in areas containing Engelmann spruce, sub-alpine fir, Douglas fir, grand fir, ponderosa pine, tamarack, aspen and lodgepole pine forests. The northern goshawk inhabits mature mountain forests and riparian zones. These habitat types occur primarily along the mountainous areas on the eastern extents of the planning area on or near Forest Service managed lands and in the Mineral Mountains. Goshawks also winter in pinyon pine and juniper habitats throughout the planning area.

**Riparian Areas/Flowing Streams and Open Water Shorelines**

Species that occur within riparian and open water habitat in the planning area include the Bonneville cutthroat trout, Arizona toad, western toad, and Brian Head Mountain snail. The Bonneville cutthroat trout is known to occur within Birch Creek, which flows through the planning area. Both of the toads occur in ponds, wetlands or open water.

**Non-game, Migratory Birds**

The Migratory Bird Treaty Act of 1918 protects migratory birds and their parts. Executive Order 13186, signed on January 10, 2001, directs federal agencies to evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern. *Birds of Conservation Concern* (FWS 2002) identifies the migratory bird species of concern in different Bird Conservation Regions (BCRs) in the United States. The planning area encompasses a portion of 2 separate BCRs – BCR 9 (Great Basin) and BCR 16 (Southern Rockies/Colorado Plateau) with I-15 being the boundary between these two BCRs. Species lists for both of these regions have been reviewed; the potential exists for at least 39 migratory bird species, currently designated as species of concern, to occur within the planning area, primarily between April and September, with several of the species known to nest within the planning area. Migratory birds occur in a wide variety of habitat types including the pinyon and juniper woodland, sagebrush-steppe, and grasslands found in the planning area.

**Other Habitats**

The Brian Head Mountain snail is a terrestrial snail that is endemic to a single localized population on public land near the summit of Brian Head Peak, along the eastern edge of the planning area in Iron County. The first living examples of this species were discovered in 1998 (Oliver and Bosworth 2002). Its sole site includes 11 hectares, only 2.3 hectares of which are occupied at 7 stations on Brian Head Peak. Its habitat is alpine, bare rock, and talus. This species was included in WildEarth Guardians' Petition to List 206 Species in the Mountain Prairie Region in July 2007 and the WildEarth Guardians Petition Requesting Emergency Listing of 32 Species under the Endangered Species Act in June 2008. The emergency petition argued that because the species occurs in only one current known location, it is vulnerable to systematic pressures or random/stochastic events causing total extirpation or extinction (Wild Earth Guardians 2008). Habitat loss and degradation and inadequate regulatory mechanisms were identified as concerns; the species is located in the immediate vicinity of a ski resort and potential threats include hikers and mountain bikers who utilize the area and domestic sheep which have been observed nearby in large numbers (NatureServe 2008). If this species is listed, consultation with FWS would occur to determine potential impacts.

### 3.7 Vegetation, including Special Status Plant Species other than FWS Candidate or Listed Species

Four main geographical vegetation zones are found within the planning area: alluvial slopes-valley bottoms, upper alluvial fan sites, foothill-mountain slopes, and wetland-riparian zones. Variations in vegetation exist within the planning area, due to altitude, moisture, and other factors. Higher elevations (e.g., Mineral Mountains) possess some stands of larger conifers, some of which have been lost in recent fires. The slopes and draws possess dense areas of mountain brush (mahogany, bitterbrush, etc.) and thick areas of oak. Big sagebrush fills many of the lower basins and big draws. Portions of the area are well watered by springs (e.g., east side of the Mineral Mountains and east of I-15).

Native vegetation for the alluvial slopes and valley bottoms, which comprise the majority of the BLM-managed land in the planning area, is commonly referred to as the salt-desert shrub vegetative community and includes relatively few perennial shrubs, grasses, and forbs. Dominant shrub species include shadscale saltbush, winterfat, budsage, and low rabbitbrush. Larger shrubs that are important on upper alluvial fan sites and in washes include species such as Nevada ephedra, rubber rabbitbrush, and desert almond. Primary grasses include Indian ricegrass, bottlebrush squirreltail, galleta grass, sand dropseed, purple three-awn, and blue grama. Gooseberryleaf globemallow is the most widespread perennial forb. Annuals include the non-native cheatgrass, halogeton, and Russian thistle.

The upper alluvial fan sites are similar in vegetative composition to those in the valley bottoms. The primary difference is an increase in the presence of Utah juniper, pinyon pine (to the west), and scattered curlleaf mountain mahogany related to the change in elevation. These species, along with black sagebrush, often dominate the shallow soils of foothills and mountain slopes. Numerous species of shrubs, grasses, and forbs result in communities with considerably greater floristic and structural diversity than those in valley locations.

Wetland-riparian habitats within the planning area include small, isolated springs, seeps, and wet meadow areas in addition to several streams and open bodies of water. Riparian/wetland habitat areas consist of shrub species such as willow and saltcedar, an overstory of cottonwoods, and various grass, forb, and sedge species.

The Milford Flats fire, the largest blaze in Utah's history, occurred in the northern portion of the planning area during the summer of 2007. This fire – the intensity and size of which was related at least in part to the presence of non-native vegetation – burned 111,760 acres within the planning area and denuded the landscape of a majority of groundcover on the northern portion of the planning area. A closure for this area was put into effect on May 22, 2008 (73 FR 29776). The travel closure and restriction is for the use and operation of motorized vehicles, including OHVs, on public lands administered by the CCFO (www.blm.gov/ut/st/en/fo/cedar_city.1.html). The purpose of the closure – in effect until November 1, 2009 – is to support ongoing emergency stabilization efforts and minimize further soil erosion. The closure provides for two growing seasons of rest consistent with grazing regulations and the Department of Interior Emergency Stabilization/Rehabilitation Handbook, which allows emergency stabilization objectives to be achieved that are focused on stabilizing soils and reestablishing vegetation. The travel closure and restriction was instituted to prevent further degradation of the watershed and to protect soils from erosion and damage by motorized vehicles following stabilization efforts, allowing vegetation to reestablish.

There are no known ESA-listed threatened, endangered or candidate plant species within the CCFO boundaries, but 12 special status plant species are known to occur or have suitable habitat within the planning area. These species and their associated habitats are presented below. Although no ESA-listed plant species currently occur in the planning area, the Frisco buckwheat was included in WildEarth Guardians' Petition to List 206 Species in the Mountain Prairie Region in July 2007 and the WildEarth Guardians Petition Requesting Emergency Listing of 32 Species under the Endangered Species Act in June 2008. This species is known from private land in the vicinity of the old mining town of Frisco, in the San Francisco Mountains in Beaver County, Utah. As of 1997, only a single population existed. The petitioners argued that because the species occurs in only one current known location, it is vulnerable to total extirpation or extinction (Wild Earth Guardians 2008). Habitat loss and degradation due to mining was

identified as a concern; mining occurred within the species' habitat in the past and renewed mining activity in the area is possible. If this species is listed consultation with FWS would occur.

| **BLM Sensitive Plant Species and Habitat** |
|---|
| **Beaver County** |
| **Pink egg milkvetch** (*Astragalus oophorus* var. *lonchocalyx*)<br>Endemic to the Great Basin in Beaver, Iron, and Washington Counties. Occurs in pinyon-juniper, sagebrush, and mixed desert shrub communities, 5,800 to 7,550 feet elevation |
| **Compact cryptanth** (*Cryptantha compacta*)<br>At least 15 known occurrences from 8 counties across the southwestern quarter of Utah including western Millard and northwestern Beaver Counties. Occurs in pinyon-juniper and adjacent ponderosa pine communities in the Needle Range, 6,400 to 7,900 feet elevation |
| **Scarlet buckwheat** (*Eriogonum phoenicium*)<br>Known only from a few widely scattered populations in western Utah. Closely resembles other buckwheats and may be a variety of *Eriogonum microthecum*. Occurs in tuffaceous ash outcrops, sagebrush communities, and pinyon-juniper woodlands, 5,200 to 6,800 feet elevation |
| **Frisco buckwheat** (*Eriogonum soredium*)<br>Endemic to the San Francisco Mountains in Beaver County. Occurs in sagebrush and juniper communities, on white limestone outcrops, 6,600 to 7,300 feet elevation |
| **Ostler's ivesia** (*Ivesia shockleyi* var. *ostleri*)<br>Endemic to Wah Wah Mountains and Needle Range of Western Beaver County. Occurs in pinyon-juniper and adjacent ponderosa pine communities in crevices or quartzite and whitish outcrops, 6,400 to 7,900 feet elevation |
| **Ostler pepperplant** (*Lepidium ostleri*)<br>Endemic to San Francisco Mountains in Beaver County. Occurs in pinyon-juniper communities in crevices in limestone outcrops, 5,800 to 6,800 feet elevation. |
| **Jones globemallow** (*Sphaeralcea caespitosa* var. *caespitosa*)<br>Occurs in western Utah in Beaver and Millard Counties. Occurs in mixed desert shrub and grass communities, mostly on the Sevy Dolomite Formation and on calcareous gravels, 4,500 to 6,400 feet elevation |
| **Frisco clover** (*Trifolium friscanum*)<br>Occurs in San Francisco and Beaver Lake Mountains in Beaver County. Occurs on volcanic gravels and limestone in pinyon-juniper woodlands, 6,900 to 7,300 feet elevation |
| **BLM Sensitive Plant Species and Habitat** |
| **Iron County** |
| **Pink egg milkvetch** (*Astragalus oophorus* var. *lonchocalyx*)<br>Endemic to the Great Basin in Beaver, Iron, and Washington Counties. Occurs in pinyon-juniper, sagebrush, and mixed desert shrub communities, 5,800 to 7,550 feet elevation |
| **Nevada willowherb** (*Epilobium nevadense*)<br>Occurs in Iron County in pinyon-juniper and oak mountain mahogany communities, on talus slopes and rocky limestone or quartzite outcrops, 5,100 and 8,800 feet elevation |
| **Subalpine goldenbush** (*Ericameria zionis*) = (*Haplopappus zionis*)<br>Endemic to southern Utah in central Garfield and southern Iron Counties. Occurson gravelly to sandy clay soils in association with manzanita, spruce, fir, and pine, 7,800 to 10,200 feet elevation |
| **Franklin's penstemon** (*Penstemon franklinii*)<br>Endemic to north end of Cedar Valley, Iron County. Occurs in in semi-barren areas in sagebrush country, often growing in sandy-loamy soil, 5,400 to 5,700 feet elevation |
| **Pinyon penstemon** (*Penstemon pinorum*)<br>Endemic to the Pine Valley Mountains in Iron and Washington Counties. Occurs in pinyon-juniper, mountain mahogany, ephedra, oak, sagebrush and less commonly greasewood communities, often on Claron Limestone or its gravels, 5,600 and 6,700 feet elevation |

### 3.8 Invasive, Non-native Species

The State of Utah has 18 listed noxious weed species (bermudagrass, johnsongrass, medusahead, quackgrass, field bindweed, hoary cress, diffuse knapweed, russian knapweed, spotted knapweed, squarrose knapweed, purple loosestrife, perennial pepperweed, leafy spurge, yellow starthistle, Canada thistle, musk thistle, scotch thistle, and dyer's woad). Beaver and Iron Counties have each identified one additional weed as noxious (bull thistle and western whorled milkweed, respectively). Other invasive weeds known to occur within the CCFO include black henbane, broadleaf pepperweed, bull thistle, cheatgrass, halogeton, and white top. Scotch thistle is by far the most widespread and prevalent noxious weed found throughout the field office.

The BLM currently treats invasive and noxious weeds using methods and practices approved in the 2007 *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (BLM 2007a). They also manage weeds under the current *Noxious Weed Control Plan for the Cedar City Field Office* (BLM 1996). Weeds are treated through cooperative agreements between the counties and other local agencies within a Cooperative Weed Management Area (CWMA). Methods of weed control include manual, mechanical, biological, prescribed burning, and chemical treatments.

Aquatic invasive species – aquatic and terrestrial organisms and plants such as Eurasian milfoil, chytrid fungus, New Zealand mudsnail, Quagga mussels, and whirling disease parasite – pose an ever-increasing threat to the health of ecosystems in the U.S. and some of these species are known to occur in southwestern Utah or nearby surrounding region.

### 3.9 Soils

There are over 800 soil map units within the CCFO and many different soil types throughout the planning area. The soil types in the planning area can be combined into three general soil associations based on landscape and climate – low and intermediate alluvial fans, upper alluvial fans, and mountains and high mountains).

The soils on the low and intermediate alluvial fans and rolling hills are well drained, moderate to coarse textured, and moderately deep to very deep. Soil depth varies considerably by the presence of shallow bedrock or silica and lime cemented hardpans which restrict root depth. The soils on the upper alluvial fans and mountain foothills are well drained shallow to deep and very gravelly to very stony throughout the profile. Soil depth is restricted more from bedrock than from cemented hardpan. Precipitation is evenly distributed between winter snow and summer rain which maintains a more uniform soil moisture than at the lower elevations. The soils in the mountains and high mountains are well drained, shallow to very deep and have gravelly, cobbly, and stony profiles. In most cases, these soils remain very cold in the root zone throughout the year. Commonly, these soils occupy very steep slopes and contain high clay levels throughout the profile when derived from igneous parent materials.

The majority of the areas where soils have been identified as having critical and severe erosion concerns are primarily associated with the hills and slopes along the eastern boundaries of the planning area (BLM 1984). This designation is based on vegetative cover and the amount and intensity of precipitation in the area.

### 3.10 Recreation

The planning area possesses a land and resource base which provides a wide variety of opportunities for recreation including upland and big game hunting, historical sightseeing and hiking on National Historic Trails, backpacking, rock hounding, fishing, off-highway vehicle (OHV) use, and ski touring (BLM 1984). Recreational use of public land is a strong contributor to the quality of life enjoyed by local residents. Recreation is generally dispersed within the planning area with the exception of the 6,517-acre Greater Three Peaks Special Recreation Management Area (SRMA) and scattered R&PP lands. Most of the opportunities available for recreation within the planning area are common throughout the southern Utah region.

The Greater Three Peaks SRMA was recently designated after a land use plan amendment. Three Peaks is a small mountain range located about 9 miles northwest of Cedar City. Parts of this range have been used extensively for recreational activities for at least 30 years and use is projected to increase in the future. Recreation in the Three Peaks area includes camping, OHV use, rock-crawling events, mountain biking, equestrian use, radio control airplane use, and picnicking. Local Boy Scout troops and church groups often use the area for outings and camping activities. Before designation of the area as an SRMA, these activities were conducted with few restrictions, resulting in damage to natural resources and conflicts between different recreational activities. Past use has resulted in greenwood tree cutting, littering, illegal garbage dumping, erosion of roads and trails, destruction of vegetation, user group conflicts, and random discharging of firearms. To resolve these conflicts, the CCFO and Iron County worked together to designate the SRMA.

The Recreation and Public Purposes Act (68 Statute 173; 43 USC 869 et. seq.), enacted in 1954 as a complete revision of the Recreation Act of 1926 (44 Statute 741), is administered by the BLM in recognition of the public need for a nationwide system of parks and other recreational and public purpose areas. The act authorizes the sale or lease of public lands for recreational or public purposes such as historic monument sites, campgrounds, schools, fire houses, law enforcement facilities, municipal facilities, landfills, hospitals, parks, and fairgrounds. Several R&PP lands are being used for parks and recreation within the planning area. Various levels of development – campsites, picnic areas, trash containers and restrooms – exist at these areas, which are used throughout the year.

### 3.11 Visual Resources

Public lands have a variety of visual (scenic) values that warrant different levels of management. Visual Resource Management (VRM) on public lands is conducted in accordance with BLM Handbook 8410 and BLM Manual 8411. The BLM uses the VRM system to identify and evaluate scenic values to determine the appropriate level of scenery management. These management classes regulate the amount of disturbance that is allowed to occur within a given area – Class I areas are managed to preserve the existing character of the landscape; Class II areas are managed to retain the existing character of the landscape, with a low level of landscape change; Class III areas are managed to partially retain the existing character of the landscape, with only moderate change to the landscape; and Class IV areas are managed to allow major modifications to the existing character of the landscape, and the level of change can be high. The planning area contains VRM Class I (Spring Creek WSA, 4,433 acres), VRM Class II (54,977 acres), III (45,799 acres), and IV (380,860 acres) areas.

Maintaining visual quality is important in southwestern Utah because major travel corridors occur near a variety of natural and scenic resources including the Cedar Breaks National Monument, Zion National Park, Ashdown Gorge Wilderness, Pine Valley Mountains Wilderness, and the Markagunt High Plateau Scenic Byway (Utah Highway 14). The Mineral Mountains, Circleville Canyon, and several areas along the Parowan Front are still in their natural state and also present a valuable visual resource for the area. These areas receive various amounts of use, some are visible from major roads, and some are VRM Class II lands, and are therefore of special concern. The CBGA FRMP/FEIS places "special emphasis on preserving scenic quality…due to the regionally high importance...for tourist access to the national parks of the area" (BLM 1986).

### 3.12 Paleontology

Paleontological resources are known to occur in the planning area, although at low density. Four geological formations that are intermittently exposed in the planning area are known to have important paleontological resources; these are described briefly below. Inventories of leases would be conducted at the APD stage to determine the presence of paleontological resources.

**Iron Springs Formation (PFYC 3)** – Important paleontological localities are found in the Iron Springs Formation including Parowan Gap, the greater Parowan Canyon, Little Creek Canyon (north of Parowan), and Summit Canyon (north of Cedar City). Both microvertebrate localities and dinosaur trackways have been reported in this formation. The Parowan Gap is an area of special concern for paleontology because important paleontological resources are known to occur in the Cretaceous-aged Iron Springs Formation exposed at Parowan Gap that include dinosaur trackways and microvertebrate deposits.

**Chinle Formation (PFYC 4), Moenave Formation (PFYC 4), and Kayenta Formation (PFYC 3)** – Statewide, important paleontological resources are routinely found in the Chinle, Moenave, and Kayenta Formations. Important paleontological resources from these formations near Cedar City area are rare, but surveys in this area have been lacking.

### 3.13 Socio-economics

Social and economic impacts of oil and gas leasing are discussed in the CBGA RMP (BLM 1984, pages 3-44 to 3-50). The 1988 Supplemental EA estimated development of 3 wells/year developed over a 10-year period. Discovery of productive oil and gas areas within the planning area would result in an increase in oil and gas production, resulting in an increase in both state and county tax income, as well as providing benefits to royalty owners. Oil and gas is expected to increase in value due to potential market shortfalls and increasing demand for oil and gas. Social and economic impacts associated with oil and gas leasing may include additional demands on governmental services, impacts on county facilities, and relocation or population increases.

Between 1990 and 2006 the population of Iron County increased from 20,789 to 40,544 and the population of Beaver County increased from 4,765 to 6,294 (representing increases of 51 and 24 percent, respectively). In 2000 there were 10,627 households in Iron County and 1,982 households in Beaver County, representing increases in both areas. The median value of owner occupied housing units at that time was $112,000 for Iron County and $89,200 for Beaver County. In 2004 the median household income was $41,205 in Beaver County and $37,495 in Iron County. The regional economy has shifted to one accommodating tourism, manufacturing, and natural resource management in recent years; government and government enterprises, retail

trade, and services are the three main sectors of the economy. Bryce Canyon National Park, Cedar Breaks National Monument, and other attractions in the area provide visitor expenditures that contribute substantially to employment and economic activity in these counties.

Potential lease areas encompass lands with widespread interspersed commercial and residential development on split-estate portions as well as the intervening or adjacent privately held land. In split-estate situations, the surface rights and subsurface rights (including the rights to develop minerals) for a parcel of land are owned by different parties. In these situations, the mineral owner must show due regard for the interests of the surface estate owner and occupy only those portions of the surface that are reasonably necessary to develop the mineral estate. Some of the lands already have residential and commercial development and improvements. The level of private surface development activity in some areas suggests that additional residential development and improvements could occur on other split-estate lands within the 10 year leasing period. Subdivisions outside of city boundaries are increasing (Fife Town, Mid-Valley Estates, Cedar Valley and others) and additional development is expected to continue. Development of mineral leases on split-estate lands has the potential to affect land/property values in an area. Included within the planning area are lands that have been identified by Beaver and Iron Counties for acquisition to accommodate residential and commercial growth. These existing and projected developments may be incompatible with unstipulated exploration and development activities if classified as open to leasing with only standard lease stipulations.

### 3.14 Wilderness Characteristics

Under section 201 of FLPMA, the BLM has the authority to conduct inventories for wilderness characteristics on public lands under its administration. In 1979-1980 BLM was directed through FLPMA to conduct a nationwide inventory of BLM-administered lands for wilderness characteristics. From this inventory existing wilderness study areas (WSAs) were determined. Since that initial inventory, the general public has provided the BLM with proposals for additions to the national wilderness system. However, due to an April 2003 legal settlement (Utah vs. Norton, the State of Utah, Utah School and Institutional Trust Land Administration, and the Utah Association of Counties), the BLM no longer has the authority to establish WSAs in the CCFO.

There are three areas within the planning area that have been proposed to possess wilderness characteristics by special interest groups. In 1999 BLM inventoried and determined there were wilderness characteristics in the Granite Peak area of the Mineral Mountains. The Granite Peak area is located in Beaver County about 15 miles west of Beaver and is comprised of 17,028 acres. The area is characterized by scenery and rugged terrain that includes granite slabs and large standing rocks. Potential leasing impacts to wilderness characteristics are analyzed for the Granite Peak area.

The second area that has been proposed as possessing wilderness characteristics by the Utah Wilderness Coalition is an isolated mountain range that has been tentatively identified as the Antelope Hills or Antelope Range area. To date, BLM has not conducted a wilderness character review of this area. In June 2008 SUWA submitted a nomination of wilderness character for the Antelope Range area. The nomination noted the areas' scenic and large canyon systems and steep and rugged cliff formations. Analysis for wilderness characteristics in the Antelope Hills area will not be conducted in this EA.

The BLM determined that the third area examined – lands contiguous to the Spring Creek Canyon WSA – did not have wilderness characteristics. Non WSA lands contiguous to the Spring Creek Canyon WSA are approximately 1,440 acres in size and are located in southern Iron County 1 mile east of Kanarraville. These lands are comprised of state land and they were excluded from further consideration for wilderness management in the 1999 inventory. Because the Spring Creek Canyon area was found not to possess wilderness character it is not considered further in this analysis.

# 4.0 ENVIRONMENTAL CONSEQUENCES

This chapter discusses the environmental consequences of implementing the alternatives described in Chapter 2. Under NEPA, actions with the potential to affect the quality of the human environment must be disclosed and analyzed in terms of direct and indirect effects – whether beneficial or adverse and short or long term – as well as cumulative effects. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by an action and occur later or farther away from the resource but are still reasonably foreseeable. Beneficial effects are those that involve a positive change in the condition or appearance of a resource or a change that moves the resource toward a desired condition. Adverse effects involve a change that moves the resource away from a desired condition or detracts from its appearance or condition. Cumulative effects are the effects on the environment that result from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions.

The No Action alternative (Offer Leases Consistent with the CBGA RMP), serves as a baseline against which to evaluate the environmental consequences of the Proposed Action alternative (Offer Leases with Additional Resource Protective Measures) and the No Leasing alternative. For each alternative, the environmental effects are analyzed for the resource topics that were carried forward for analysis in Chapter 3.

## 4.1 Analysis Assumptions and Guidelines

Leasing is an administrative action that affects economic conditions but does not directly cause environmental consequences. However, leasing is considered to be an irretrievable commitment of resources because the BLM generally cannot deny all surface use of a lease unless the lease is issued with a NSO stipulation. Potential oil and gas exploration and production activities, committed to in a lease sale, could impact resources and uses in the planning area. Direct, indirect or cumulative effects to resources and uses could result from as yet undetermined and uncertain future levels of lease exploration or development. In order to provide a basis for analysis, the RFD scenario is applied to each of the alternatives analyzed in detail. The RFD scenario is a long term projection of oil and gas exploration, development, production, and reclamation activity in a defined area for a specified period of time and serves as an analytical baseline for identifying and quantifying direct, indirect, and cumulative effects of oil and gas activity, under standard lease terms and conditions, on all potentially productive areas open to oil and gas and leasing, and forms the foundation for the analysis of the effects of oil and gas management decisions.

In general, the BLM USO conducts a quarterly competitive lease sale to sell available oil and gas lease parcels in the state. In the process of preparing a lease sale the BLM USO compiles a list of lands nominated and legally available for leasing, and sends a draft parcel list to each field office where the parcels are located. Field office staff then review and verify that the parcels are in areas open to leasing; that appropriate stipulations and notices have been included; that any new information that has become available, or any circumstances that have changed, are assessed to determine whether additional analysis is required; that other consultations have been conducted, if necessary; and that any special resource conditions are identified for potential bidders. The field office then either determines that existing analyses provide an adequate basis for leasing recommendations or that additional NEPA analysis is needed before making a leasing recommendation. Once the draft parcel review is completed and returned to the USO, a list of

available lease parcels and stipulations is made available to the public through a Notice of Competitive Lease Sale (NCLS). Lease stipulations and notices applicable to each parcel are specified in the sale notice.

As described in Chapter 1, this analysis represents a programmatic assessment of the effects of leasing in the eastern portion of the CCFO; as such at the time of this review, it is unknown whether a parcel will be sold or a lease issued. Furthermore, it is unknown when, where, or if future well sites or roads might be proposed. Although no site-specific activities are specified, analysis of projected surface disturbance impacts, should a lease be developed, was estimated based on the RFD in the supplemental EA for Oil and Gas Leasing, Cedar City District, prepared in 1988. If leases are offered, purchased and issued, typical subsequent developments may include the construction of drill pads, access roads, pipeline construction, and ancillary facilities, described below. Detailed site specific analysis of individual wells or roads would occur when a lease holder submits an APD. This EA would be used to determine the necessary administrative actions, stipulations, lease notices, special conditions, or restrictions that would be made a part of an actual lease at the time of issuance. Under all alternatives, continued interdisciplinary support and consideration would be required to ensure on the ground implementation of planning objectives, including the proper implementation of stipulations, lease notices and BMPs through the APD process. If it is determined that this EA adequately analyzes potential impacts and addresses the use of referenced conservation measures, the preparation of additional NEPA documents may not be required prior to offering future leases.

Standard lease terms provide for reasonable measures to minimize adverse impacts to specific resource values, land uses, or users (Standard Lease Terms are contained in Form 3100-11, Offer to Lease and Lease for Oil and Gas, U.S. Department of the Interior, BLM, June 1988 or later edition). Although once the lease has been issued, the lessee has the right to use as much of the leased land as necessary to explore for, drill for, extract, remove, and dispose of oil and gas deposits located under the leased lands, operations must be conducted in a manner that avoids unnecessary or undue degradation of the environment and minimizes adverse impacts to the land, air, water, cultural, biological, and visual elements of the environment, as well as other land uses or users. Compliance with valid, nondiscretionary statutes (laws) is included in the standard lease terms and would apply to all lands and operations that are part of all of the alternatives. Nondiscretionary actions include the BLM's requirements under federal environmental protection laws, such as the Clean Water Act, Clean Air Act, ESA, NHPA, and FLPMA, which are applicable to all actions on federal lands even though they are not reflected in the oil and gas stipulations in the RMP and would be applied to all potential leases regardless of their category. Also included in all leases are the two mandatory stipulations for the statutory protection of cultural resources (BLM Washington Office Instruction Memorandum No. 2005-03, Cultural Resources and Tribal Consultation for Fluid Minerals Leasing) and threatened or endangered species (BLM Washington Office Instruction Memorandum No. 2002-174, Endangered Species Act Section 7 Consultation), described in Section 2.3. BLM would also encourage industry to consider participating in EPA's Natural Gas STAR program under all alternatives. The program is a flexible, voluntary partnership between EPA and the oil and natural gas industry wherein EPA works with companies that produce, process, transmit and distribute natural gas to identify and promote the implementation of cost-effective technologies and practices to reduce emissions of methane, a greenhouse gas.

For purposes of the effects analysis, the RFD and the primary construction, operations, and abandonment elements described below would be similar for the Proposed Action and No Action alternatives; however because of the additional resource protective measures addressed in the Proposed Action alternative, locations of some facilities may be different to reduce the potential for effects to resources.

**Reasonably Foreseeable Development**

As described above, the RFD scenario serves as an analytical baseline for identifying and quantifying direct, indirect, and cumulative effects of oil and gas activity and forms the foundation for the analysis of the effects of oil and gas management decisions in planning and environmental documents. The EAR, RMP and Supplemental EA (BLM 1976; BLM 1986; BLM 1988) describe in detail fluid minerals leasing and operations and RFD scenarios for the planning area. In those analyses it was estimated based on past drilling history that exploratory wells would continue to be drilled in the entire Cedar City District at the rate of about three wells per year for the foreseeable future. It was further estimated that the drilling targets would continue to be primarily anticlinal structures in the eastern part of the district where quantities were anticipated to be low. Between 1988 and 2006, three oil and gas exploration wells were drilled on public lands in the Cedar City District disturbing about 12 acres. The current rate of drilling, extent of disturbance, and magnitude of impacts are within the projection made in the Supplemental EA. A much smaller number of wells and surface disturbance has occurred since completion of that analysis. None of the wells were economically productive, and no oil and gas field developments have occurred. Consequently, the impact analysis is appropriate and within the range of those described in the Supplemental EA. If there is a discovery, the RFD scenario would change in which case additional NEPA analysis would be required.

For the purposes of this analysis, the main assumption is that the RFD over a 10-year period for the planning area would be 30 exploratory we1ls (3 wells/year × 10 years), with a 180-acre disturbance from well sites (2 to 6 acres/well × 30 wells = 180 acres maximum) and a 150-acre disturbance from access roads (40 feet maximum road width disturbed × average of 1 mile access road length = 5 acres × 30 wells = 150 acres maximum) for a total disturbance of 330 acres (180 acres from well sites and 150 acres from access roads). These assumptions were determined to be reasonable because only about 12 acres have been disturbed in the Cedar City District from 1988 to 2006 from fluid mineral leasing activity, representing a much smaller number of wells and surface disturbance than anticipated in the Supplemental EA analysis. Thus the impacts of leasing under the alternatives analyzed in this EA are not expected to surpass or differ significantly from the effects analyzed previously; therefore the RFD scenario is still reasonable based on the actual level of activity that has occurred since planning which is well within the projected scenario.

**Well Pad and Road Construction**

Equipment for well pad construction would consist of dozers, scrapers, and graders. Topsoil from each well pad would be stripped to a depth of six inches and stockpiled for future reclamation. The topsoil would be seeded with native species of plants and left in place for the life of the well, then used during the final reclamation process. Disturbance for each well pad would be estimated at an area of approximately 350 feet by 250 feet (~2 acres of land), including topsoil piles. For this analysis, it was assumed that disturbance for well pads could be as high as 6 acres per well to account for any infrastructure (e.g., gas pipelines) that would be required if

the wells were to go into production (see below). Disturbed land would be seeded with a mixture and rate as recommended or required by the BLM.

Depending on the locations of the proposed wells it is anticipated that some new or upgraded access roads would be required to access well pads and maintain production facilities. Construction of new roads or upgrades to existing roads would require a 30-foot wide right of way (ROW) and would be constructed of native material. Any new roads constructed for the purposes of oil and gas development would be utilized year-round for maintenance of the proposed wells and other facilities, and for the transportation of fluids and/or equipment, and would remain open to other land users. The type of equipment required for these activities would be the same as that needed for well pad construction. After completion of road construction activities, the 30-foot wide ROW would be reclaimed to an 18-foot wide crowned running surface as well as drainage ditches. It is not possible to determine the distance of road that would be required because the location of the wells would not be known until the APD stage. However, for purposes of analyses it is assumed that disturbance from access roads would be similar to development in other areas (~5 acres of disturbance).

**Production Operations**

If wells were to go into production, facilities would be located at the well pad and typically include a well head, a dehydrator/separator unit, and storage tanks for produced fluids. The production facility would consist of two storage tanks, a truck load-out, heater-treaters, separator, and dehydrator facilities. Construction of the production facility would be located on the well pad and not result in any additional surface disturbance.

All permanent surface structures would be painted a flat, non-reflective color (e.g., juniper green) specified by the BLM in order to blend with the colors of the surrounding natural environment. Facilities that are required to comply with the Occupational Safety and Health Act (OSHA) may be excluded from painting color requirements. All surface facilities would be painted immediately after installation and under the direction and approval of the BLM.

If oil is produced, the oil would be stored on location in tanks and transported by truck to a refinery. The volume of tanker truck traffic for oil production would be dependent upon production of the wells, however, it is estimated oil would be transported to a Salt Lake City refinery at least once a week, using 280-barrel tanker trucks.

If natural gas is produced, construction of a gas sales pipeline would be necessary to transport the gas. An additional Sundry Notice and analysis under NEPA would be completed, as needed, for any pipelines and/or other production facilities across public lands. BLM BMPs, such as burying the pipeline or installing the pipeline within the road ROW, would be considered at the time of the proposal.

All operations would be conducted following the “Gold Book” Surface Operating Standards for Oil and Gas Exploration and Development. The Gold Book was developed to assist operators by providing information on the requirements for conducting environmentally responsible oil and gas operations on federal lands. The Gold Book provides operators with a combination of guidance and standards for ensuring compliance with agency policies and operating requirements, such as those found at 43 CFR 3000 and 36 CFR 228 Subpart E; Onshore Oil and Gas Orders (Onshore Orders); and Notices to Lessees. Included in the Gold Book are environmental BMPs; these measures are designed to provide for safe and efficient operations while minimizing undesirable impacts to the environment.

Exploration and development on split-estate lands is also addressed in the Gold Book, along with IM 2003-131, *Permitting Oil and Gas on Split-estate Lands and Guidance for Onshore Oil and Gas Order No. 1*, and IM 2007-165, *Split-estate Report to Congress – Implementation of Fluid Mineral Leasing and Land Use Planning Recommendations*. Proper planning and consultation, along with the proactive incorporation of these BMPs into the APD Surface Use Plan of Operations (SUPO) by the operator, will typically result in a more efficient APD and environmental review process, increased operating efficiency, reduced long-term operating costs, reduced final reclamation needs, and less impact to the environment.

**Produced Water Handling**
Water is often associated with either produced oil or natural gas. Water is separated out of the production stream and can be temporarily stored in the reserve pit for 90 days. Permanent disposal options include surface discharge pits or underground injection. Handling of produced water is addressed in Onshore Oil and Gas Order No. 7.

**Maintenance Operations**
Traffic volumes during production would be dependent upon whether the wells produced natural gas and/or oil, and for the latter, the volume of oil produced. A daily visit by a pumper would occur regardless of whether the well produced oil or gas.

Well maintenance operations may include periodic use of work-over rigs and heavy trucks for hauling equipment to the producing well, and would include daily inspection of the well by a pumper. The road and the well pad would be maintained for reasonable access and working conditions. Portions of the well pad not needed for production of the proposed well, including the reserve pit, would be recontoured and reclaimed, as an interim reclamation of the site per the SUPO.

**Plugging and Abandonment**
If the wells do not produce economic quantities of oil or gas, or when it is no longer commercially productive, the well would be plugged and abandoned. The wells would be plugged and abandoned following specifications from a BLM Petroleum Engineer, which would include requiring cement plugs at strategic positions in the well bores. All fluids in the reserve pit would be allowed to dry prior to reclamation work. After fluids have evaporated from the reserve pit, sub-soil would be backfilled and compacted within 90 days. If the fluids within the reserve pit have not evaporated within 90 days, the fluid would be pumped from the pit and disposed of in accordance with applicable regulations. The well pad would be recontoured, and topsoil would be replaced, scarified, and seeded within 180 days of the plugging the well.

## 4.2 Issues Carried Forward for Analysis

### 4.2.1 Cultural Resources

**No Action Alternative**
Cultural resources may occur on lands included in future leases and may be altered by activities related to oil and gas leasing. Equipment used in constructing well pads or roads would result in ground disturbance to both surface and subsurface sediments, increasing the opportunity for both direct and indirect impacts to cultural resources. Increased human activity in the area also would increase the possibility of damage to, or removal of, cultural resources in areas with oil and gas development. Adverse effects could also include introduction of visual, atmospheric, or audible elements that diminish the integrity of a property's historic features.

The potential for conflicts between leasing and the ability to protect cultural resources would generally be related to the size of an individual lease parcel in relation to the density of known or unknown sites within that parcel. For instance, the larger the parcel, the less chance there would be for conflict between leasing (and development) and cultural resources because of the ability to move the well to a different location within the parcel. Most leases in the planning area would allow for locating one well within a parcel without resulting in adverse effects; a particular locality within a lease area could be unavailable, but some other portions of the parcel would likely be available and suitable for exploration and development.

The majority of the sites in the planning area are of a low to medium cultural resource site density, in which case it is assumed that adverse effects would not result from leasing with appropriate cultural protections (described below). Higher density sites are not as common in the planning area, but siting of one well within a parcel with high or very high site density could require additional mitigation up to and including avoidance of entire areas. The exception to the assumption that in most cases one well could be sited within a parcel without adverse effects is the area around the Parowan Gap. The RMP provides for maximum protection of the resources in the Parowan Gap National Historic Property, but this only protects a 40-acre area around the petroglyph panels near the Gap itself. As described in Chapter 3, the Tribes believe that a larger area needs to remain undisturbed to protect all the important cultural resources and the integrity of the area, not just those encompassed by the National Register property. They have requested deferral of a core area around the Parowan Gap from fluid minerals leasing.

Under the No Action alternative, both the standard and special lease terms – including the 200 meter/60-day rule – that would apply to future leases provide for reasonable measures to minimize adverse impacts to most cultural resources in the planning area, with the exception of the Parowan Gap area (see below). In addition, the Cultural Resources and Tribal Consultation for Fluid Minerals Leasing stipulation (described in Section 2.3) would be attached to all leases.

Because the precise location of any development activity is not known until the APD stage, an assessment of site-specific effects would be made at that time and any future undertaking related to minerals development on the leases would be subject to compliance with all federal laws, including Section 106 of the NHPA, as well as agency guidance. Site specific cultural resource surveys and appropriate mitigation measures are required as part of the APD process after parcels are leased. NRHP-eligible or listed sites would be avoided. If objects of cultural value are encountered during construction, all work affecting the resource would stop and the BLM would be contacted so that mitigating measures could be identified and carried out. These measures are generally protective enough that additional mitigation would not be needed for most leases within the planning area.

If leasing were to occur on parcels adjacent to the Parowan Gap, adverse effects including the introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's important historic features would occur. Based on the MOU Concerning Communication and Cooperation with Paiute, the BLM would notify the Tribe of any actions that might be of interest or concern to the Tribes. Consultation with SHPO would also occur based on the protocol developed with that office. Based on the ability to avoid or otherwise mitigate potential impacts to cultural properties, no historic properties would be expected to be impacted for most of the locations within the planning area, based on the conclusion that at least one well could be located on each parcel without adversely affecting cultural resources. This

would exclude the Parowan Gap area where even locating one well in that area could result in adverse effects to that resource.

**Proposed Action Alternative**
Effects to cultural resources under the Proposed Action alternative would be similar to those described above for the No Action alternative because the same types of protections would be implemented. If it is determined that application of the Cultural Resources stipulation (IM 2005-03) would not provide sufficient protection of the cultural resources in a lease, application of NSO could occur where necessary to protect cultural resources. This would preclude establishment of wells or well pads or construction of roads, pipelines, or power lines on the BLM-managed land within a lease parcel, providing greater protection for the resources present. Any oil or gas extracted from the leases would have to come from wells directionally drilled at an angle underground from adjacent or nearby private or public lands. Due to the large size of the Parowan Gap area and the variety of resources encompassed there, directional drilling from adjacent land may not be possible without adversely affecting cultural resources in that area. If application of NSO would not provide sufficient protection then the permit to drill could be denied or the decision to lease could be deferred.

**No Leasing Alternative**
Under this alternative, lands would not be leased and cultural resources would receive the greatest amount of protection. This alternative would be implemented where the standard stipulations and BMPs under the No Action and Proposed Action alternatives were considered inadequate to protect the resource from indirect effects of exploration and development.

The Hopi Tribe has requested that a core area around the Parowan Gap be closed to leasing due to the presence of TCPs important to maintaining the cultural identity of the Paiute and Hopi Tribes. Further study of the area and continued consultation with the Paiutes and Hopi may expand the area of protection such that even development on adjacent lands may indirectly affect the integrity of the property's important historic features. Due to the large size of the Parowan Gap area and the variety of resources encompassed there, the BLM would determine that the only way to adequately protect the resource is to not allow leasing in that area.

### 4.2.2 Native American Religious Concerns

**No Action Alternative**
Effects to Native American Religious Concerns from the No Action alternative would be similar to those described for cultural resources. The same protective measures (e.g., 200 meter/60-day rule, Cultural Resources and Tribal Consultation for Fluid Minerals Leasing stipulation) would be applied to provide for reasonable measures to minimize adverse impacts. The Tribes have identified the Parowan Gap as an area that contains TCPs and they have requested deferral of a larger area around the Gap from fluid minerals leasing in order to protect the integrity of the area. Implementation of the No Action alternative could result in adverse effects due to the introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's important historic features if leasing were to occur on parcels adjacent to the property.

**Proposed Action Alternative**
Effects to Native American Religious Concerns under the Proposed Action alternative would be similar to those described above for the No Action alternative because the same types of protections would be implemented. If it is determined that application of the Cultural Resources

stipulation (IM 2005-03) would not provide sufficient protection of resources in an area, application of NSO could occur where necessary to protect Native American Religious Concerns and TCPs. This would preclude establishment of wells or well pads or construction of roads, pipelines, or power lines on the BLM-managed land within a lease parcel. Any oil or gas extracted from the leases would have to come from wells directionally drilled at an angle underground from adjacent or nearby private or public lands. Due to the large size of the Parowan Gap area and the variety of resources encompassed there, directional drilling from adjacent land may still result in adverse effects to Native American Religious Concerns and TCPs. If application of NSO would not provide sufficient protection then the permit to drill could be denied or the decision to lease could be deferred.

**No Leasing Alternative**
This alternative would be implemented where the standard stipulations and BMPs under the No Action and Proposed Action alternatives were considered inadequate to protect the resource from effects of exploration and development. Under this alternative, Native American Religious Concerns, including those associated with Parowan Gap, would receive the greatest amount of protection through the exclusion of leasing in the area.

### 4.2.3 Threatened, Endangered, or Candidate Animal Species

**No Action Alternative**
Oil and gas exploration and development could affect threatened and endangered wildlife resources in a variety of direct and indirect ways including direct loss of habitat; physiological stress; disturbance and displacement of individuals or populations; habitat fragmentation; introduction of competitive or non-native organisms; and secondary effects and indirect habitat loss, including sedimentation or other loss of habitat functionality. All leases would include the lease stipulation for the protection of threatened or endangered species (per BLM Washington Office Instruction Memorandum No. 2002-174, Endangered Species Act Section 7 Consultation), as described in Section 2.2. Any future leases would also contain a compliance notification that states "If in the conduct of operations, threatened or endangered species, objects of historical or scientific interest, or substantial unanticipated environmental effects are observed, lessee will immediately contact lessor. Lessee shall cease any operations that would result in the destruction of such species or objects."

BLM is required under Section 7 of the ESA to consult on all federal actions that may impact ESA-listed species. California condor, Mexican spotted owl, southwestern willow flycatcher, and yellow-billed cuckoo were not known or suspected to occur within the CCFO at the time the current RMP was developed. Without specific mitigations for these species in the RMP, formal consultation was needed between the FWS and BLM to address impacts to these species associated with land use planning actions within the field office. BLM and FWS personnel completed programmatic Section 7 consultation work culminating in a set of standard, species-specific lease notices for listed species that are to be attached to fluid mineral leases offered in Utah. These measures include temporal and spatial buffers to protect known or suitable habitat for these species. The Conservation Measures also require that surveys be conducted, according to FWS protocol, prior to any disturbance related activities that have been identified to have the potential to impact threatened and endangered species.

Inclusion of these measures at the lease stage, and compliance with these measures during energy development activities, would ensure that potential effects to listed species are insignificant or discountable, in part by avoiding impacts to sensitive habitats, and by avoiding

disturbances during crucial life history seasons (i.e., nesting, breeding or wintering). These measures would also provide full disclosure to the lessee of potential environmental concerns and strategies to minimize effects to listed species. FWS concurred with the BLM determination that where these measures are incorporated into future proposals, there is a greater likelihood that BLM will meet the standard of "*may affect, but not likely to adversely affect*" species listed under the ESA. However, if these measures are not implemented, early coordination and additional Section 7 consultation with FWS would be necessary.

**Proposed Action Alternative**

As in the No Action alternative, the species-specific lease notices developed as part of the Section 7 Consultation for Oil and Gas Lease Sales (FWS 2004) between the BLM and FWS would be attached to applicable oil and gas lease sales to protect the threatened, endangered and candidate species that may occur within the planning area. Effects from implementation of these resource protective measures – such as seasonal restrictions, prohibition on seasonal occupancy, restriction on location of structures and surface disturbance – would be the same as the No Action alternative assuming that these measures would be implemented in a way that would satisfy Section 7 consultation requirements. These lease notices are anticipated to protect ESA-listed species habitats and individuals that may occur within the planning area, and result in a determination of "*may affect, not likely to adversely affect*" for gas and oil exploration and development.

Impacts to Utah prairie dogs from oil and gas exploration and extraction include habitat loss and degradation, disturbance, and road mortality. Habitat degradation and loss occurs through vegetation crushing, increased soil erosion or soil compaction, and introduction or proliferation of invasive weeds (particularly cheatgrass) that degrade prairie dog habitat (Rosmarino 2003). Concerns have also been expressed about impacts from seismic exploration, but Young and Sawyer (1981) concluded that any impact from seismic testing is negligible. Menkens and Anderson (1985) also concluded that there were negligible impacts from seismic exploration in a similar study of white-tailed prairie dogs.

To minimize potential impacts of oil and gas activities on Utah prairie dogs, the FWS and BLM have developed a set of avoidance and minimization measures for Federal oil and gas leases within this species' range. These measures currently apply to all BLM leasing activities within the Utah prairie dog's range, and lessees who follow these guidelines are provided a streamlined Section 7 consultation process. Controlled surface use and timing limitations implemented under this alternative would provide protection for Utah prairie dogs and their habitat within the planning area. BLM projects would be designed to avoid direct disturbance to populations and habitat wherever possible based on recommendations in the Conservation Measures from LUP-Level Consultations for T&E Species of Utah (BLM 2006d). Consultation related to this species has occurred with FWS on past fluid mineral leasing projects and the FWS concurred that use of the species specific lease notices on appropriate parcels would result in a "may affect, not likely to adversely affect" determination for listed species. Surface occupancy or other surface disturbing activity would be avoided within 0.5 mile of active prairie dog colonies, and permanent surface disturbance or facilities would be avoided within 0.5 mile of potentially suitable, unoccupied prairie dog habitat, as identified and mapped by Utah Division of Wildlife Resources since 1976. Furthermore, speed limits would be set at 25 mph on operator-created and maintained roads in occupied prairie dog habitat and/or travel would be restricted between April 1 and September 30 when prairie dogs are more likely to be active above ground. Speed

restriction of 25 miles per hour in Utah prairie dog occupied habitat is expected to limit prairie dog mortality. These buffers and timing limitations would protect Utah prairie dogs from disturbance caused by gas and oil exploration and development.

The Utah prairie dog stipulation provides adequate protection for this federally listed species. Although a No Surface Occupancy stipulation or no leasing would provide additional protection for this species, the FWS has concurred that the controlled surface use under the Utah Prairie Dog Stipulation would not result in adverse affects (FWS 2004). In addition, the BLM Land Use Planning Handbook 1601-1 states that, "When applying leasing restrictions, the least restrictive constraint to meet the resource protection objective should be used."

Consultation for California condor has been conducted to ensure protection of this species. Controlled surface use protection for California condor proposed under this alternative would restrict surface disturbing activity that would result in an aboveground facility within 1.0 mile of known nests and within 0.5 mile of known roost locations and would avoid human activity that would disrupt breeding activities within 1.0 mile of occupied breeding habitat and that would disrupt roosting activities within 0.5 mile of occupied roost sites. The buffer zones established by these protection measures would protect California condors from disturbance caused by oil and gas exploration and development in the planning area.

Controlled surface use protections proposed under this alternative for areas that contain suitable habitat for the Mexican spotted owl would protect owls that currently exist in the area or which may disperse into the area in the future. There is known suitable habitat within the planning area and at least one nesting territory has been designated as a Protected Activity Center (PAC); therefore drilling and permanent structures would be avoided within 0.5 miles of suitable habitat unless an area was surveyed according to protocols and determined as unoccupied. No surface disturbing action that would result in an aboveground facility would be allowed within 0.5 mile of known Mexican spotted owl nests or within a designated PAC that would be likely to disrupt crucial life cycle activities. Furthermore there would be timing limitations from March 1 through August 31 which would prevent the disruption of burrowing owl breeding activities within 0.25 mile of an occupied nest. These controlled surface use buffers and timing limitations would protect Mexican spotted owls from disturbance caused by gas and oil exploration and development.

Even though protection of potential habitat (i.e., riparian areas) is identified within the RMP, no specific mitigations are imposed by the RMP for the protection of the southwestern willow flycatcher. Controlled surface use and timing limitations implemented under this alternative for southwestern willow flycatcher would provide adequate protection for this species and for the limited amount of suitable habitat present in the planning area. Avoidance of surface disturbing activities within a 0.25-mile buffer from suitable riparian habitats and of permanent surface disturbances within 0.5 mile of suitable habitat would ensure habitat for this species is protected. Habitat disturbances would also be avoided within 0.25 mile of occupied breeding habitat from May 1 to August 15 to ensure breeding activities would not be impacted. Specific protection of this species during the breeding season would be beneficial within the areas located along the eastern portion of the planning area where habitat is present for it. These buffers and timing limitations would protect southwestern willow flycatchers from disturbance caused by gas and oil exploration and development.

Controlled surface use and timing limitations proposed under this alternative for the yellow-billed cuckoo would provide protection for this species and its habitat within the planning area. No surface disturbing activity would be allowed that would result in an aboveground facility within 400 feet of suitable yellow-billed cuckoo riparian habitat and no human activity would be allowed that would disrupt yellow-billed cuckoo breeding activities from May 1 to August 15 within 0.25 mile of occupied breeding habitat. The amount of suitable habitat for yellow-billed cuckoo is limited within the area but these protections would protect habitat that is present and limiting human activity during breeding season would protect cuckoos that may use the planning area. These buffers and timing limitations would protect yellow-billed cuckoo from disturbance caused by oil and gas exploration and development.

**No Leasing Alternative**

Implementation of the No Leasing alternative would provide additional protection for parcels where ESA-listed species or their habitat encompass the majority of an individual parcel making it difficult to site one well without impacting the species. If this situation arose it would require more protection than the timing restrictions, controlled surface use, and no surface occupancy presented in the Proposed Action alternative and therefore this alternative would be implemented to protect those resources from effects of exploration and development. If adverse effects to threatened and endangered species would result from siting one well on a lease then the BLM would preclude leasing for the entire area that had been proposed leasing and thus would not permit any development or disturbance of the land surface associated with a particular lease. Because no surface disturbance would occur within a given lease parcel, the potential for adverse impacts to threatened and endangered species under this alternative would be reduced compared to the other alternatives.

### 4.2.4 Fish and Wildlife, including Special Status Species other than FWS candidate or listed species (e.g., migratory birds)

**No Action Alternative**

**General Wildlife**

Oil and gas exploration and development could affect wildlife resources in a variety of direct and indirect ways. Sufficient information – gathered from oil and gas exploration and development activities elsewhere in Utah, coupled with documented observation of environmental consequences of habitat alterations – exists to programmatically assess the potential impacts of oil and gas leasing and development on these lands. Environmental effects of the alternatives are likely to be similar to other surface and habitat disturbing activities that affect aquatic and terrestrial species of wildlife and would be the same as those described above for threatened and endangered species (i.e., direct loss of habitat; physiological stress; disturbance and displacement of individuals or populations; habitat fragmentation; introduction of competitive or non-native organisms; and secondary effects and indirect habitat loss).

The majority of the lands in the planning area would be available for leasing with standard lease terms. General protection for wildlife species is provided in accordance with 43 CFR 3162.5-1(a) and Section 6 of the standard lease form (Form 3100-11), which states that the "Lessee shall conduct operations in a manner that minimizes adverse impacts to the land, air and water, and to cultural, biological, visual, and other resources, and other land uses or users. Lessee shall take reasonable measures deemed necessary by lessor to accomplish the intent of this section."

The CBGA FRMP/FEIS identified lands in the planning area that would be leased with special stipulations, such as timing or controlled surface use stipulations for crucial deer and elk winter range, sage-grouse, golden and bald eagles, and riparian areas (BLM 1984). In areas where these wildlife species or range was identified in the CBGA FRMP/FEIS, implementation of these stipulations would protect these resources by limiting disturbance within this habitat during the time period when it would have the most detrimental impact. However, in areas where new information is available or where ranges have expanded since the development of the CBGA FRMP/FEIS, protection to these resources would not necessarily be afforded through these stipulations. Thus, the No Action alternative would not be as protective of these resources as the Proposed Action alternative which would include additional resource protective measures for wildlife.

The CBGA FRMP/FEIS imposes seasonal NSO restrictions for protection of bald and golden eagle nesting and roosting habitat. Specific dates associated with seasonal restrictions for all raptors are not specified within the RMP and are under the discretion of field office administrators. The ability to relocate disturbance areas up to 200 meters under the 200 meter/60-day rule would generally provide protection for raptors and their habitats. However, the No Action alternative would not include the BMPs identified for raptors and their associated habitats (BLM 2006a) and so would not be as protective of these resources as the Proposed Action alternative.

The CBGA FRMP/FEIS contains a stipulation that prohibits surface disturbance associated with oil and gas development within 400 feet of live water, riparian habitat, or associated waterways. This stipulation indirectly protects fisheries resources within the planning area by reducing the potential for adverse impacts to riparian habitat and water quality.

Although the amount of disturbance per well site would be small (2 to 6 acres), the removal of vegetation associated with the development of a lease may result in the loss of forage and habitat and may result in the displacement of various wildlife species including small mammals, reptiles, birds, and insects. Overall this affect is expected to be small, given the small extent of disturbance dispersed over the large planning area, rehabilitation after exploration and development activities would restore some of the lost forage and habitat in the long-term.

**Sensitive Animal Species**

Effects to BLM sensitive animal species under the No Action alternative would be similar to those described above for general wildlife. Although the amount of disturbance per well site would be small, the removal of vegetation associated with the development of a lease may result in the displacement of BLM sensitive species including migratory birds. Implementation of avoidance measures, typically within the 200 meter/60-day rule and more where site-specific analysis supports the need to move greater distances, would provide protection where necessary to protect these species during crucial seasonal periods, such as nesting and wintering and in important habitats. Timing restrictions and mitigation measures presented in the CBGA FRMP/FEIS would reduce the potential for impacts to the bald eagle and sage-grouse. Sage-grouse strutting grounds (from March 15 to May 1) and bald eagle perching and roosting (from November 1 to April 30) would be protected during critical periods when disturbance would have an impact by interrupting the reproductive cycles of these species. Specific mitigations or restrictions are not included for other sensitive species; however, the CBGA FRMP/FEIS does include a seasonal NSO restriction that provides protection to raptor nesting and roosting habitats. Specific dates associated with seasonal restrictions are not specified within the RMP

and are under the discretion of field office administrators. As with general wildlife, protection to sensitive animal species would not necessarily occur in areas where new information is available or where ranges have expanded since the development of the CBGA FRMP/FEIS. Therefore, the No Action alternative would not be as protective of these resources as the Proposed Action alternative which would include additional resource protective measures for sensitive animal species.

Mitigations presented in the CBGA FRMP/FEIS for the protection of some resources, such as riparian areas, would indirectly benefit some sensitive species such as migratory birds. However, species-specific protection measures are not included in the CBGA FRMP/FEIS for the majority of the sensitive species. Where appropriate, and based on site-specific analysis, additional protective measures are needed to keep BLM sensitive species from trending toward being listed under the ESA. For instance, no species-specific mitigation measures for pygmy rabbits are discussed in the CBGA FRMP/FEIS and this species is particularly subject to habitat fragmentation concerns. Minimization of this impact is considered a priority when locating individual disturbance sites and site-specific analysis would result in management decisions that limit disturbance and/or minimize the impacts of fragmentation for this and other BLM-sensitive species. Similarly, no mitigations are included that require surveys to determine the presence or absence of BLM sensitive species, such as burrowing owls, and the subsequent avoidance of areas containing nests even though they are known to occur within the planning area.

**Proposed Action Alternative**

**General Wildlife**

Additional protections for general wildlife and crucial habitats would be implemented under this alternative and the location and timing of some activities may be changed compared to the No Action alternative. Special stipulations for the protection of wildlife were identified in the CBGA FRMP/FEIS for areas where those resources were known. Since that time, however, new information has become available and ranges of some animals have expanded into areas that would not be protected with the CBGA FRMP/FEIS stipulations. Therefore, the Proposed Action alternative would include additional resource protective measures for wildlife that would result in less adverse impacts from exploration and development activities to fish and wildlife species compared to the No Action alternative.

Provisions are present within Sections 3 and 6 of the Standard Lease Form which require compliance with existing laws and would allow the BLM to impose additional restrictions at the permitting phase, if the restrictions will prevent violation of law, policy or regulation, or avoid undue and unnecessary degradation of lands or resources. Resource protective measures for general wildlife that could be applied under this alternative are identified in Appendix B. In short, these include expanding the timing limitations for crucial winter mule deer, elk, and pronghorn habitat beyond that identified in the CBGA FRMP/FEIS, and specifying timing limitations for crucial elk calving, deer fawning habitat, and pronghorn fawning habitat on which the CBGA FRMP/FEIS is silent. This alternative also would include a controlled surface use protection for raptors wherein surveys would be required whenever disturbances and/or occupancy is proposed in association with oil and gas exploration and development within potential raptor protection buffer areas. Appropriate buffers and timing limitations would be determined based on the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* (Romin and Muck 2002). These measures would provide greater

protection than is currently mandated by the CBGA FRMP/FEIS and would comply with the non-statutory regulation of the Migratory Bird Treaty Act.

Other resource protective measures that could be implemented as part of the Proposed Action alternative to protect general wildlife include a controlled surface use stipulation for riparian areas wherein no surface disturbance or use would be allowed within 400 feet of riparian areas unless it can be shown that (1) there is no practicable alternative; (2) that all long-term impacts are fully mitigated; or (3) that the construction is an enhancement to the riparian areas. Protection of the riparian habitat type – although limited within the planning area – is important because it provides habitat for many different species of important wildlife and migratory birds. Fisheries would also be protected under this alternative through a controlled surface use restriction. No surface use would be allowed within 400 feet of live water or the reservoirs located in the Beaver and Sevier River drainages, Parowan and Cedar Valley drainages, or Pinto Creek/ Newcastle Reservoir drainage to prevent degradation to fisheries.

A notification of a potential timing limitation would be attached to leases under this alternative for the protection of waterfowl. Disruptive activities within 0.25 mile of the Minersville and Newcastle Reservoirs, Quichapa Lake, or identified surface waters with nesting waterfowl during crucial migration periods (from approximately March 15 through July 15) would likely cause negative impacts and would be discouraged. Delays of particularly disturbing actions would be considered within areas with concentrations of migrating or wintering waterfowl (generally from November 1 through March 15). Specific measures for waterfowl protection were not included in the RMP, and therefore this alternative would provide greater protection to waterfowl than the No Action alternative. Protections in the RMP and other management direction for open water, riparian, and wetland areas would also provide protection to waterfowl.

**Sensitive Animal Species**

Effects to BLM sensitive animal species under this alternative would be similar to those described for general wildlife under the No Action alternative. However, additional species-specific protections would be attached to leases under this alternative beyond those originally included in the CBGA FRMP/FEIS resulting in changes in location and timing of some activities. Protective measures, such as seasonal restrictions, prohibition on seasonal occupancy, and restrictions on location of structures and surface disturbance, would be included on leases where sensitive wildlife resources are known or suspected to occur within the planning area and would result in fewer, or less intensive, impacts to sensitive animal species and migratory birds.

A controlled surface use limitation for Utah BLM-sensitive species would be attached to leases containing BLM-sensitive species or their known habitats under this alternative. This notice would inform the lessee/operators that additional measures or mitigation may be required to protect and benefit these sensitive and important species. Surface disturbance or otherwise disruptive activities that would result in direct and indirect disturbance to populations or individuals would be avoided where practicable. Modifications to the SUPO may be required in order to protect these resources from surface disturbing activities in accordance with Section 6 of the lease terms, ESA, FLPMA, the Migratory Bird Treaty Act and 43 CFR 3101.1-2.

Notices that import the need for timing limitations and controlled surface use restrictions for greater sage-grouse would be attached to leases under the Proposed Action alternative and would provide greater protection to sage-grouse strutting, nesting, brood-rearing habitats, and winter concentration areas than that provided by the CBGA FRMP/FEIS. These additional measures

would provide two months of additional restrictions during breeding season as well as additional protections to nesting and brooding habitats and winter concentration areas not addressed in the CBGA FRMP/FEIS.

Some studies have shown that full field energy development appears to have severe negative impacts on sage-grouse populations under current lease stipulations (Lyon and Anderson 2003, Holloran 2005, Kaiser 2006, Holloran et aL 2007, Aldridge and Boyce 2007, Walker et al. 2007, Doherty et al. 2008). Research indicates that oil or gas development exceeding approximately 1 well pad and associated infrastructure per square mile results in calculable impacts on breeding populations, as measured by the number of male sage-grouse attending leks (Holloran 2005, Naugle et al. 2006). Studies by Walker et al. (2007) indicate that the current 0.25-mile buffer lease stipulation is insufficient to adequately conserve breeding sage-grouse populations in areas having full development. Yearling female greater sage-grouse avoid nesting in areas within 0.6 miles of producing well pads (Holloran et al. 2007), and brood-rearing females avoid areas within 0.6 miles of producing wells (Aldridge and Boyce 2007). This suggests a 0.6-mile NSO around all suitable nesting and brood-rearing habitats is required to minimize impacts to females during these seasonal periods.

The BLM and other land- and wildlife-management agencies continue to study sage-grouse populations, especially in oil and gas development areas, and identify and implement protective measures for this species within core areas. Under the RFD scenario presented in this analysis, full energy field development would not occur and the protective measures included in this analysis are considered adequate; they have been developed "Using the Best Available Science to Coordinate Conservation Actions that Benefit Greater Sage-Grouse Across States Affected by Oil & Gas Development in Management Zones I-II (Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming)" based on the *Multi-State Sage-Grouse Coordination and Research-based Recommendations*.

Some studies suggest that all areas within at least 4-miles of a lek should be considered nesting and brood-rearing habitats in the absence of mapping. NSO or other protections may also need to be considered for crucial winter range. Survival of juvenile, yearling, and adult females are the three most important vital rates that drive population growth in greater sage-grouse (Holloran 2005, Colorado Greater Sage-Grouse Conservation Plan Steering Committee 2008). Doherty et al. (2008) demonstrated that sage-grouse avoided otherwise suitable wintering habitats once they have been developed for energy production, even after timing and lek buffer stipulations had been applied (Doherty et al. 2008). For this reason, increased levels of protection may need to be considered in crucial winter habitats. While increased NSO buffers alone are unlikely to conserve sage-grouse populations, results from Walker et al. 2007 suggest they will increase the likelihood of maintaining the distribution and abundance of grouse and should increase the likelihood of successful restoration following energy development.

Research on the distribution of nests relative to leks and on the timing of nesting indicates that timing stipulations to protect nesting hens and their habitat should be in place from March through June in mapped breeding habitat or (when nesting habitat has not been mapped) within 4 miles of active lek sites (Moynahan 2004, Holloran et al. 2005, Colorado Greater Sage-Grouse Conservation Plan Steering Committee 2008).

A notice of controlled surface use restriction for pygmy rabbits would be attached to leases under this alternative. No surface disturbing activity that would result in an aboveground facility or

semi-permanent disturbance (e.g., roads, pipelines, reservoirs, etc.) would be allowed within 300 feet of pygmy rabbit habitat. Application of this buffer would reduce human presence and disturbance within suitable pygmy rabbit habitat and provide adequate protection for the species.

Biologists with the BLM recently concluded that in most cases a 300-foot buffer around pygmy rabbit habitat was sufficient to ensure protection for the species, especially so in the current RFD scenario considered for this EA (Keefe, personal communication, 2008). Placement of facilities and roads and other ancillary disturbances is certainly a key to making any buffer work, but the 300-foot buffer is sufficient to minimize risk of detrimental impacts to the pygmy rabbit. Evaluations prior to treatment would be conducted to identify the areas containing pygmy rabbits.

Under the Proposed Action alternative, management of raptors would be guided by the use of the BMPs identified in the *Best Management Practices for Raptors and Their Associated Habitats in Utah* (BLM 2006a). Eight of Utah's raptor species that currently receive enhanced protection, in addition to the regulatory authority provided by the Migratory Bird Treaty Act, would be managed under this directive and include the bald eagle, golden eagle, Mexican spotted owl, California condor, northern goshawk, ferruginous hawk, short-eared owl, and burrowing owl. Management of raptors under this alternative would provide greater protection to this resource than the No Action alternative, which would not implement the BMPs for raptor management.

A controlled surface use protection measure for fisheries and aquatics would be attached to leases under this alternative. No surface use would be allowed within 400 feet of live water or the reservoirs located in the Beaver and Sevier River drainages, Parowan and Cedar Valley drainages, or Pinto Creek/Newcastle Reservoir drainage in order to prevent fisheries degradation. This conservation measure would provide a greater degree of protection to fisheries habitat and general fisheries, including important cooperative management species like the Bonneville cutthroat trout, than the No Action alternative.

**No Leasing Alternative**

**General Wildlife**

Under this alternative no leasing would occur and thus impacts to wildlife would be less than those that would occur under the other alternatives. This alternative would provide additional protection to parcels that are found to have wildlife species or crucial habitats that encompass the entire parcel, making it impossible to site even one well without adversely impacting the species. This alternative could protect large blocks of habitat that are important to wildlife species and would be implemented if the BLM determined that the only way to adequately protect the wildlife resource was to not allow leasing in the area. The seasonal and surface use restrictions under the Proposed Action alternative are considered sufficient to protect general wildlife species and their habitats that may occur within the planning area; therefore no leasing for an entire lease is not currently foreseen as a necessary condition for the protection of general wildlife species, particularly in light of the small amount of disturbance that would be projected to occur.

**Sensitive Animal Species**

Impact to BLM sensitive animal species would be similar to those described for general wildlife above. While this alternative would provide for protection of sensitive animal species, the seasonal and surface use restrictions under the Proposed Action alternative are considered sufficient to protect sensitive wildlife and their associated habitats that may occur within the planning area, particularly in light of the small amount of disturbance that would be projected to

occur. Therefore no leasing for an entire lease is not currently foreseen as a necessary condition for the protection of sensitive wildlife in the planning area.

### 4.2.5 Vegetation, including Special Status Plant Species other than FWS Candidate or Listed Species

**No Action Alternative**

Under the No Action alternative 2 to 6 acres per well site would be disturbed during initial development of the site. Vegetation removal and soil handling associated with these activities would have both direct and indirect impacts on vegetation resources. Direct effects would include removal of vegetation and modification of structure and extent of cover types. Indirect impacts may include increased potential for weed invasion, exposure of soils to accelerated erosion, shifts in species composition and/or change in plant density, reduction in wildlife habitat and livestock forage, and changes to visual aesthetics.

The area affected by the Milford Flats fire that burned during the summer of 2007 is closed to support ongoing emergency stabilization efforts. If lands in this area were included in a future lease, the BLM would examine the condition of the rehabilitation efforts to ensure vegetation is reestablished to minimize the potential for spread of nonnative and invasive species due to ground disturbance before approving any access or other plans at the APD stage.

Facilities would be developed in adherence to the Gold Book standards and all disturbed areas would eventually be reclaimed as described in Section 4.1. BMPs including recountouring disturbed areas and revegetation with native species would be implemented to minimize the disturbance area and site-specific mitigation measures may be proposed during the APD stage to reduce adverse effects to vegetation. The overall effects would be removal of vegetation on a fraction of a percent of the total land area in the planning area until final reclamation efforts are completed.

Prior to any vegetation disturbance within suitable habitat types for the 12 BLM sensitive plant species present in Iron and Beaver Counties, a survey would be conducted to determine presence of these plant species. Disturbance of these habitat types may directly and indirectly impact individual plants. If a species is present the BLM would first implement avoidance measures to accommodate and avoid direct impacts to individuals of the species. The 200 meter/60-day rule would be implemented, which allows for the relocation of proposed operations up to 200 meters to provide protection for resources – in this case sensitive plant species. If large populations of sensitive plant species are found, additional lease notices or stipulations may be required. These additional avoidance distances are regularly implemented, but each time, the mitigation measure must be based on site-specific analysis and fall under the definition of a "reasonable measure" to protect surface resources, per Section 6 of the standard lease form and 43 CFR 3101.1-2.

**Proposed Action Alternative**

Although initial surface disturbance would be the same under the Proposed Action alternative as that presented under the No Action alternative and all revegetation and reclamation practices described in Section 4.1 would apply, the location of these disturbances may vary. Under this alternative specific resource protective measures beyond those presented in the current RMP (BLM 1984) and Gold Book (BLM 2007b) would be implemented for the protection of riparian habitats and special status plants; these additional measures would be achieved through relocations greater than 200 meters, where necessary, and would thus be more protective of the resource. NSO could also be applied under this alternative to protect other resources and would

indirectly reduce the potential for adverse effects to vegetation by precluding establishment of wells or well pads or construction of roads, pipelines, or power lines in a specified area.

A number of protective measures are proposed under this alternative that would result in fewer disturbances to vegetation resources than the No Action alternative. One of these measures for the protection of soils (e.g., controlled surface use – erodible soils and steep slopes) would indirectly benefit vegetation resources by decreasing the risk of erosion. Under this alternative surface disturbance or use would be prohibited within 400 feet of the boundary of riparian areas which would provide additional protection to riparian vegetation and the habitat types associated with these areas. A protective measure for protection of BLM sensitive plant species would also be included under this alternative to preclude surface disturbing activity that would result in direct disturbance to populations or individual special status plants. Modifications to the SUPO may be required in order to protect the special status plants and/or habitat from surface disturbing activities in accordance with Section 6 of the lease terms, ESA, and 43 CFR 3101.1-2. The ability to apply these measures throughout the planning area – beyond the 200 meter rule – would provide protection to larger populations and their habitat that may be found within a lease parcel and would therefore reduce the potential for adverse effects to vegetation.

**No Leasing Alternative**
Under this alternative the BLM would preclude leasing on an entire parcel and thus would not permit any development or disturbance of the land surface associated with a particular parcel. Because no surface disturbance would occur, the impacts to vegetation under this alternative would be less than the other alternatives. Native plant ecosystems would continue to persist, in the absence of wildfires or human-caused disturbances, and special status plant species would not be impacted.

### 4.2.6 Invasive, Non-native Species

**No Action Alternative**
Soil disturbing activities such as oil and gas exploration and development could result in the spread of non-native, invasive plant species and noxious weeds. Current practices to manage and control noxious and invasive species throughout the planning area would continue as authorized under the 1996 *Noxious Weed Control EA* and the 2007 *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (BLM 2007a). Cooperative agreements with local county and other agencies are also in place to help control further spread and infestation of noxious weeds within the planning area. Furthermore, BMPs described in the Gold Book (BLM 2007b) would be implemented at any well site to control the spread of invasive and non-native species. Successful management and control would be accomplished by treating areas where invasive species can become established – such as along roadways, on the margins of well pads, and adjacent to other facilities. Common conditions of approval include cleaning and sanitization of field equipment and vehicles brought in from other regions to prevent importation of noxious weeds and other non-native species including aquatic invasive species.

Reclamation actions described in the vegetation section (see above) would further reduce the potential for introduction and/or spread of invasive plant species. Therefore, although soil-disturbing activities could occur under the No Action alternative, practices that are already in place and mitigations that would be required as part of any APD would limit the potential for establishment or spread of invasive, non-native species.

**Proposed Action Alternative**
Under the Proposed Action alternative, the management practices would be the same as those discussed under the No Action alternative; no specific additional protective measure is proposed to address invasive, non-native species. The operator would be required to implement standard BMPs and other measures deemed reasonable for the control of non-native or invasive species as addressed in the Gold Book (BLM 2007b) and other approved management plans. As a result, the effects would be similar to those described for the No Action alternative but the location of disturbances may vary because wells and associated facilities may be relocated to avoid impacts to a particular resource. Mitigations beyond those presented in the current RMP (BLM 1984) and Gold Book implemented for the protection of soils (e.g., controlled surface use – erodible soils and steep slopes) would indirectly benefit vegetation resources when compared to when compared to the No Action alternative by decreasing the risk of erosion and increasing the potential success of rehabilitation of disturbed areas, therein reducing the potential for the spread of invasive species.

In addition, if NSO were applied under this alternative it would provide further resource protection on BLM lands. This stipulation would preclude establishment of wells or well pads or construction of roads, pipelines, or power lines on BLM land. Any fluid minerals extracted from the leases would have to come from wells directionally drilled at an angle underground from adjacent or nearby private lands. Because no surface disturbance would occur within a given lease parcel under NSO, the indirect impacts to invasive, non-native species under this alternative would be less than those that would occur under the No Action alternative. The operator would be required to implement standard BMPs associated with rehabilitation of disturbed areas as addressed in the Gold Book (BLM 2007b) and other approved management plans for directional drilling from adjacent lands to control the spread of invasive, non-native species.

**No Leasing Alternative**
Under this alternative the BLM would prohibit leasing for an entire parcel and thus would not permit any development or disturbance of the land surface. This would preclude establishment of wells or well pads or construction of roads, pipelines, or power lines on BLM land. Because no surface disturbance would occur within a given parcel, the impacts to invasive, non-native species under this alternative would be less than those that would occur under the other alternatives. In light of the small amount of disturbance that would occur over the planning area and protective measures implemented under the Proposed Action alternative, application of no leasing is not deemed necessary to address invasive species establishment or spread.

### 4.2.7 Soils

**No Action Alternative**
Development of a well site within a lease parcel would result in the disturbance of 2 to 6 acres of land. Potential impacts to soils in the planning area from surface disturbance activities associated with oil and gas exploration and development include the removal of vegetation, mixing of soil horizons, soil compaction, increased susceptibility of the soils to wind and water erosion, contamination of soils with petroleum products, loss of topsoil productivity, potential for increased dust (PM10 emissions) as a result of road building and increased vehicle traffic, and a potential increase in sediment yield to nearby ephemeral drainages and perennial streams.

The CBGA FRMP/FEIS does not provide any specific mitigation or restrictions on development to protect specific soil types or areas that need special consideration (e.g., steep slopes and highly erosive soils); rather, the objectives in the CBGA FRMP/FEIS for soils protection are limited to compliance with the Clean Air Act and the Clean Water Act. Operators would be required to implement standard BMPs addressed in the Gold Book (BLM 2007) and other approved management plans. The amount of highly erosive soils in the planning area is limited and implementation of the 200 meter/60-day rule could reduce impacts to soils by moving disturbances up to 200 meters from areas of highly erosive soils or steep slopes.

Overall impacts to soils are anticipated to be small given the RFD scenario analyzed in this EA. If a significant oil or gas discovery were to occur that led to greater development, then a new NEPA analysis would occur.

**Proposed Action Alternative**
Under the Proposed Action alternative, management practices would be similar to those discussed under the No Action alternative. The operator would be required to implement standard BMPs for soils protection addressed in the Gold Book (BLM 2007) and other approved management plans. As a result, the effects would be similar to those described for the No Action alternative; however, the location of disturbances may vary because wells and associated facilities may be relocated to avoid impacts to a particular resource based on other measures implemented as part of this alternative. Measures beyond those presented in the current RMP (BLM 1984) and Gold Book would be implemented under this alternative for the protection of soils (i.e., controlled surface use for erodible soils and steep slopes and NSO for steep slopes). Implementation of these protective measures on a site specific basis associated with ground disturbing activities would limit the impacts to soils in high erosion areas.

A controlled surface use mitigation for erodible soils and steep slopes would be attached to leases under this alternative. Construction would be planned to avoid soils that are highly erosive and/or in critical or severe erosion conditions and BMPs would be implemented to reduce impacts to soils. Areas containing these soil types are limited within the planning area, primarily occurring along the slopes in the eastern portion of the planning area (locations presented on Map 3.7 of the CBGA FRMP/FEIS on p. 3-32). NSO would be applied in areas with slopes in excess of 30 percent. These protective measures would reduce the risk of erosion by prohibiting or restricting development from occurring on critical or severe erosion conditions and limiting the degree of slope that may be disturbed associated with well development. These mitigations are anticipated to provide suitable protection for this resource.

**No Leasing Alternative**
This alternative would prevent soil disturbing activities from occurring within a parcel therefore the potential for impacts to soils would be eliminated. Due to the limited amount of highly erosive soils in the planning area in combination with the small amount of disturbance that would occur, the controlled surface use and NSO restrictions available under the Proposed Action alternative are considered sufficient to protect soils; therefore no leasing for an entire parcel is not deemed necessary for the protection of soils.

### 4.2.8 Recreation

**No Action Alternative**
Potential impacts to recreation from the No Action alternative would consist of lost recreational opportunities or diminished recreational experiences within a lease parcel. Potential impacts

would include all forms of recreation, including upland and big game hunting, sightseeing, hiking, backpacking, rock hounding, fishing, off-highway vehicle use and ski touring. Surface disturbance associated with well pads, as well as associated facilities, roads, and pipelines would be visible to recreational users. The short-term increase in noise and traffic associated with construction, drilling, and completion activities would diminish the recreational experience of visitors seeking a more primitive environment.

Both standard and special lease terms, including the 200 meter/60-day rule, that would apply to future leases could reduce adverse impacts to recreation resources by requiring operations to be moved up to 200 meters. This could result in relocation of facilities into areas that are less visible from routes or areas used by dispersed recreation users. In addition, the CBGA FRMP/FEIS identified areas containing R&PP lands as available for leasing with the NSO stipulation to avoid adverse impacts that would occur through surface use of the land by oil and gas exploration and development. This stipulation applies only to lands identified in the RMP and not R&PP parks and other lands that have been developed since that time. No special protection would be provided for the recently designated Greater Three Peaks SRMA or new R&PP lands under this alternative. Exploration and development of oil and gas leases on these lands would result in adverse effects to the recreation resources present in those areas.

Overall impacts to recreation are anticipated to be small given the RFD scenario analyzed in the EA.

**Proposed Action Alternative**

Although initial surface disturbance would be the same under the Proposed Action alternative as that presented under the No Action alternative, the location of these disturbances may vary because of additional protective measures applied under this alternative to protect a variety of resources. Specific measures beyond those presented in the CBGA FRMP/FEIS (BLM 1984) and Gold Book (BLM 2007b) have been proposed for the protection of riparian habitats and wildlife species that would indirectly benefit recreation resources. A controlled surface use measure for VRM Class II Areas included under this alternative also has the potential to indirectly reduce impacts to recreation by affecting the location of facilities, which could be sited in less visible/scenic areas.

Application of NSO to developed or potential recreation sites could occur under this alternative. No surface occupancy or use would be allowed on developed or potential recreation sites for the purpose of preserving and protecting the developed and potential recreational sites as described in the Greater Three Peaks Special Recreation Area Plan Amendment. This alternative would provide additional protection to recreation resources beyond those present in the Gold Book and what could be achieved through the 200 meter/60-day rule compared to the No Action alternative. If an NSO stipulation were added to a lease parcel, any fluid minerals would have to be extracted from wells directionally drilled from adjacent or nearby private lands. Because no surface disturbance would occur within a given lease parcel under NSO, the impacts to recreation under this alternative would be less than those that would occur under the No Action alternative. The operator would be required to implement standard BMPs associated with rehabilitation of disturbed areas as addressed in the Gold Book (BLM 2007b) and other approved management plans for directional drilling from adjacent lands.

Due to the large size of some of the recreation areas, such as the Greater Three Peaks SRMA, and the variety of resources encompassed there, directional drilling may not be possible due to the distance from adjacent land to any fluid mineral resources contained within the protected area. In those locations, the stipulations and additional protective measures under the Proposed Action alternative may be inadequate to protect the resource from exploration and development.

Recreation would be indirectly impacted to a lesser degree under this alternative because of the potential to reduce visual and scenic impacts by relocating some facilities. Additional protections afforded to wildlife under this alternative would also result in reduced impacts to recreation, particularly upland and big game hunting.

**No Leasing Alternative**

Under this alternative the BLM would preclude leasing and thus would not permit any development or disturbance of the land surface associated with a particular parcel. Because no surface disturbance would occur within a given parcel, the impacts to recreation, including hunting, under this alternative would be eliminated. Due to the large size of some recreation areas, such as the Greater Three Peaks SRMA, and the variety of resources encompassed there, the standard stipulations and mitigations under the No Action and Proposed Action alternatives may be inadequate to protect the resource from exploration and development and may require application of no leasing to adequately protect the resource.

### 4.2.9 Visual Resources

**No Action Alternative**

Construction and drilling activities could result in visual impacts under this alternative. New well pads, facilities, and roads would increase visual contrasts created by construction activities within the planning area. Long-term landscape contrasts would result from well pad facilities, roads, etc. yielding a more developed visual setting. The introduction of long-term visual modifications that create contrast would reduce visual harmony within the overall landscape. However, because only 310 acres of surface disturbance would occur over 10 years, representing a disturbance of 0.005 percent of the land area, any effects would be small and localized.

Because the vast majority of the planning area is categorized as VRM Class IV (approximately 380,860 acres) – which allows a high level of change and major modifications to the existing character of the landscape – exploration and development would be in conformance with VRM management objectives. Approximately 45,799 acres are categorized as Class III – managed to partially retain the existing character of the landscape, with only moderate change to the landscape; approximately 54,977 acres are categorized as Class II – managed to retain the existing character of the landscape, with a low level of landscape change – where mitigations may be needed to be in conformance with VRM management objectives; and approximately 4,433 acres are categorized as Class I – managed to preserve the existing character of the landscape.

The CBGA RMP identified some of the lands in the planning area as available for leasing with special stipulations for protections of visual resources; this would provide some protection but it does not include all of the Class II areas. Standard lease terms and mitigations in the Gold Book for visual resources would be implemented to reduce impacts (including paint color selection, facility placement, vegetation and topographic buffers) and proposed operations could be relocated up to 200 meters to reduce impacts.

**Proposed Action Alternative**
Impacts to visual resources from implementation of the Proposed Action alternative would be similar to those described for the No Action alternative but the locations of disturbance may be different due to implementation under this alternative of protective measures for wildlife and other resources. In addition a controlled surface use measure would be attached to leases under this alternative for the protection of VRM Class II areas. This would allow only short-term or mitigable visual intrusions on VRM Class II lands for the purpose of preserving the form, line, color or texture of the landscape so as not to attract the viewer's attention. As a result, this alternative would result in fewer potential impacts to visual resources within the planning area than the No Action alternative.

NSO could also be applied under this alternative for protection of other resources, prohibiting any development or disturbance of the land surface associated with a parcel. Any oil or gas extracted from the leases would have to come from wells directionally drilled from adjacent or nearby private or public lands. This alternative would indirectly result in greater protection to visual resources than the No Action alternative and would ensure VRM objectives are met in Class II areas.

**No Leasing Alternative**
Under this alternative no development or disturbance of the land surface would be permitted associated with a parcel. Thus greater protection to visual resources would be provided than under the Proposed Action or No Action alternatives. If application of the protective measures under the Proposed Action alternative did not provide adequate protection then no leasing could be applied to ensure VRM objectives are met for Class II areas.

### 4.2.10 Paleontology

**No Action Alternative**
Where surface disturbance is proposed on undisturbed areas, paleontological resources could be at risk. Surface-disturbing activities have the potential to break or destroy fossils that occur on the surface within these areas. Disturbance of bedrock also has the potential for exposing, breaking, and destroying fossils. The CBGA FRMP/FEIS does not contain specific measures for the protection of paleontological resources. Although the ability to move operations up to 200 meters would reduce the impact to known paleontological resources, surveys would not be required under this alternative and therefore unknown paleontological resources could be unintentionally damaged.

**Proposed Action Alternative**
Although the locations of surface disturbing activities may be different under this alternative as a result of protective measures applied for the protection of other resources, the amount of surface disturbance would be the same as under the No Action alternative. Therefore, the potential for impacts to paleontological resources, including damage or destruction to fossils due to surface-disturbing activities, would be similar. However, a controlled surface use measure attached to leases under this alternative would provide greater protection for paleontological resources by requiring surveys to be conducted before any ground disturbing activities to ascertain the presence or absence of this non-renewable resource. In areas with the potential for fossils to occur – the Iron Springs, Chinle, Moenave, and Kayenta Formations – paleontological surveys would be conducted prior to any surface disturbance associated with oil and gas exploration and development. If fossils are encountered during the survey, the discovery would be assessed and documented, and either collected or avoided so as not to destroy the resource. Modifications to

the SUPO may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2. If fossils are encountered during excavation, construction would be suspended until appropriate mitigation, and/or compliance measures are developed and implemented.

NSO could also be applied under this alternative for the protection of certain resources, in which case no surface development or disturbance of the area associated with the resource of concern would be allowed. Any fluid minerals extracted from the leases would have to come from wells directionally drilled from an area outside the location of the resource. As a result of this and the controlled surface use measure under this alternative, greater protection would be provided to paleontological resources than under the No Action alternative and the potential for adverse effects to paleontological resources would be minimized.

**No Leasing Alternative**
Under this alternative, paleontological resources would receive additional protection in the form of application of a no leasing category. This alternative would preclude any development or disturbance of the land surface associated with a parcel and thus would provide greater protection than the Proposed Action alternative. However, given the small amount of land that would be disturbed over the entire planning area and the small amount of this resource present, the protective measures included with the Proposed Action alternative would minimize the potential for adverse effects to paleontological resources; no leasing for an entire parcel is not deemed necessary for the protection of paleontological resources.

### 4.2.11 Socio-economics

**No Action Alternative**
Due to the minimal number of wells projected to be developed over the next 10 years, impacts on socio-economics would be minimal. By continuing to lease oil and gas parcels in the planning area, some additional revenue would be collected on the state and local levels. Impacts would occur to private land owners on split-estate lands and development of wells on parcels directly adjacent to residential developments may reduce property values; however, the extent of these impacts is immeasurable at this time due to property value fluctuations and the uncertainty of where wells would be established on future leases. The ability to move operations up to 200 meters at the APD stage would enable the BLM to reduce potential negative impacts to residential areas or owners of split-estate lands but may not eliminate them entirely.

**Proposed Action Alternative**
Although initial surface disturbance would be the same under the Proposed Action alternative as that presented under the No Action alternative, the location of these disturbances may vary because of additional protective measures applied under this alternative to protect a variety of resources. No specific mitigation measures are proposed to alter impacts to socio-economic resources within the planning area, however application of NSO could occur under this alternative and would provide additional resource protection beyond what could be achieved through the 200 meter/60-day rule. If an NSO stipulation were added to a lease parcel, any fluid minerals would have to be extracted from wells directionally drilled from adjacent or nearby private lands. Because no surface disturbance would occur within a given lease parcel under NSO, the impacts to the particular lease would be less than those that would occur under the No Action alternative. Impacts could still occur to private land owners on split-estate lands and development of wells on parcels directly adjacent to residential developments may reduce property values.

**No Leasing Alternative**
Implementation of no leasing would prevent oil and gas exploration and development activities on split-estate lands or those adjacent to other privately held land thereby preventing a potential reduction in property values. However, by not leasing parcels there would also be a reduction in potential revenue available to the local economy.

### 4.2.12 Wilderness Characteristics

**No Action Alternative**
In accordance with existing land use plans, non-WSA lands with wilderness characteristics may be managed to protect and/or preserve some or all of the characteristics identified during wilderness characteristics inventories. The level of management of wilderness characteristics

depends upon resource prescriptions within the existing land use plan. During the 1999 inventory of the Granite Peaks area, the area was found to contain wilderness characteristics for its naturalness and was of sufficient size to provide visitors outstanding opportunities for solitude and primitive recreation. The current CBGA FRMP/FEIS does not specifically discuss the wilderness characteristics in this area because the inventory occurred after the approval of the CBGA FRMP/FEIS; however it does indirectly provide protection through regulations imposed on VRM Class II areas. Construction and drilling activities in this area would result in adverse effects to wilderness characteristics under this alternative. The presence of well pads, facilities, and roads would increase visual contrasts and noise and detract from the area's naturalness. Standard lease terms and mitigations in the Gold Book (including paint color selection, facility placement, vegetation and topographic buffers) and the ability to relocate facilities up to 200 meters would reduce but not eliminate the potential for impacts.

**Proposed Action Alternative**
Although no specific mitigation measures have been developed by the BLM to protect wilderness characteristics in areas identified as non-WSA lands with wilderness characteristics, the Proposed Action alternative would provide additional protections beyond those stated under the No Action alternative if NSO were applied to a lease for the protection of resources. If an NSO stipulation were added to a lease parcel, any gas and oil would have to be extracted from wells directionally drilled from adjacent or nearby lands outside the non-WSA lands with wilderness characteristics which would reduce the potential for adversely affecting the area's wilderness characteristics. The additional protective measures associated with visual resources would also aid in protecting the natural beauty of the area. The Granite Peaks non-WSA lands with wilderness characteristics makes up less than 2 percent of the lands addressed under this assessment. Under the current RFD the likelihood of developing a producing well in the area is fairly low. If the size of the non-WSA lands with wilderness characteristics makes directional drilling unfeasible due to the distance from adjacent land to any gas and oil resources contained within the protected area NSO may be inadequate to protect the resource from exploration and development.

**No Leasing Alternative**
Implementation of no leasing would provide added protection to lands with wilderness characteristics by excluding development on parcels occurring within the Granite Peak non-WSA lands with wilderness characteristics. Preventing exploration and development would maintain the natural characteristics of the area and would be the most protective alternative for parcels with wilderness characteristics.

### 4.3 Cumulative Impacts Analysis

A cumulative impact is defined in CEQ regulations (40 CFR §1508.7) as "the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions." Cumulative impacts can result from individually minor but collectively major actions taking place over a period of time. The *Supplemental EA for Oil and Gas Leasing in the Cedar City District* (BLM 1988) developed an RFD scenario and analyzed the cumulative impacts of oil and gas leasing based on that scenario. That analysis is incorporated by reference herein.

Past and present actions and reasonably foreseeable future actions with the potential to contribute to cumulative effects are discussed below followed by an analysis of cumulative effects. A

variety of activities, such as sightseeing, biking, camping, and hunting, have occurred and are likely to continue to occur in the project area; these activities likely result in negligible impacts to resources because of their dispersed nature. Other activities, such as livestock grazing, vegetation projects, and wildland fire, have also occurred in the project area and are likely to occur in the future; these types of activities are likely to have a greater impact on resources in the project area because of their more concentrated nature. Because these activities are occurring within the project area boundaries, they have the potential to contribute to cumulative effects. All resource values addressed in Chapter 3 have been evaluated for cumulative effects. If, through the implementation of mitigation measures or project design features, no net effect to a particular resource results from an action, then no cumulative effects result. Therefore, resources that were not carried forward for analysis, such as riparian resources (see Appendix A), are not considered in this analysis because it was determined that the action alternatives would not result in effects to those resources.

### 4.3.1 Past and Present Actions

In general, a Cumulative Impact Analysis Area (CIAA) varies for different resources; because this is a programmatic analysis and exact locations of any potential future exploration and development is not known, the CIAA for the resources analyzed in this EA is the BLM-managed lands and subsurface resources within the project boundary. Past and/or ongoing activities in the CIAA that could combine to produce cumulative impacts include oil and gas exploration and development, livestock grazing and rangeland improvements, recreational activities (particularly OHV use), natural and prescribed fire,fire rehabilitation efforts and other vegetation treatments, invasive species/noxious weed control, and increased private land development (e.g., subdivision construction activities).

Based on the past drilling history, it is estimated that exploratory wells will continue to be drilled in the district at the rate of about three wells per year for the foreseeable future. Drilling targets will continue to be primarily anticlinal structures in the eastern part of the district. Quantities are anticipated to be low; no oil and gas fields have been discovered in Iron or Beaver Counties and wildcat wells drilled in the past have not resulted in any usable discoveries. The current rate of drilling, extent of disturbance and magnitude of impacts are within the projection made in the Supplemental EA (BLM 1998). In fact, the number of wells and the amount of surface disturbance that has occurred since completion of that analysis is less than predicted; between 1988 and 2006, three oil and gas exploration wells have been drilled on public lands in the Cedar City District resulting in disturbance of about 12 acres and no oil or gas production has resulted. Consequently impacts should be within the range of those described in the Supplemental EA.

Livestock grazing is currently a permitted use of public lands within the CIAA and although some minor changes may be expected over the next few years, it is reasonable to expect that livestock grazing would continue to occur on public lands. Grazing in the area can impact vegetation and soils near water sources and other areas where livestock congregate and can affect wildlife habitat.

Recreation within the CIAA is generally dispersed with more concentrated use occurring in other areas in the region outside of the planning area. Population growth in the area has increased the amount of recreation use occurring and at the same time has displaced some recreational users who enjoy dispersed activities to more remote areas. Use of the area by OHV recreationists has the potential to disturb soil and vegetation and affect wildlife habitat; OHV use that deviates from designated trails on a routine basis has the tendency to remove vegetation and cause rutting

and localized compaction and erosion of soils. Designation of the Three Peaks SRMA will likely have beneficial impacts on recreation, but will also positively affect other resources in the area through enhanced management of the area.

The Milford Flats fire affected 111,760 acres of lands within the planning area during the summer of 2007. An emergency stabilization plan was developed that involved implementing various reseeding methods, incorporating soil retention structures, and repairing facilities such as fences, pipelines, and water developments (BLM 2007). Treatment for invasive species is occurring and the area was closed to travel and grazing to allow time for the treatments to be effective. Noxious weed treatments as well as other vegetation treatment projects are also occurring at various times in the other locations in the project area and result in short term ground disturbance.

Surface disturbance associated with oil and gas development could combine with vegetation removal and ground disturbance related to livestock grazing, OHV use, and vegetation treatment projects to result in cumulative effects. Impacts from these and other uses can be locally substantial but overall they affect a small portion of the lands within the CIAA. Soil disturbing activities from energy exploration and these other activities can reduce or remove the natural components that stabilize desert soils and increase soil loss through water and wind erosion. Eolian dust mobilized from wind erosion of arid-land soils generally contains high concentration of base cations, and the dust typically has high concentrations of nitrogen and phosphorous as well as elevated concentrations of a range of atmospheric pollutants (Neff et al. 2008). The increase in these inputs to ecosystems can have implications for surface-water alkalinity, aquatic productivity and terrestrial nutrient cycling (Neff et al. 2008). BMPs would be implemented during ground disturbing activities to minimize the amount of dust generated.

There is also the potential for cumulative effects to wildlife and their habitat from these activities. Livestock grazing can reduce the amount of forage available for wildlife and contribute to the proliferation of non-native weeds (such as cheatgrass) that outcompete native plants and provide inadequate nutrition for prairie dogs and other species. Domestic livestock grazing can also result in shrub encroachment (and subsequent loss of nutritious forbs and grasses) and alteration of fire ecology. Grazing disturbance in pygmy rabbit habitat can alter the composition, function and structure of habitats required by this species. Vegetation treatments that target the mature and old growth sagebrush required by the pygmy rabbit are leading to fragmentation of habitat for this species. Impacts to wildlife can also occur where OHV use denudes soil and creates gullies. ORV use can affect Utah prairie dogs through loss of habitat, proliferation of noxious weeds, and direct disturbance of individuals, resulting in interruption of above-ground foraging and other life-sustaining activities. Impacts to wildlife from the actions proposed in this analysis would be reduced by BMPs and measures implemented for their protection.

#### 4.3.2 Reasonably Foreseeable Action Scenario (RFAS)

Many of the same actions and activities identified above as past and present actions would continue to affect the analysis area in the future and comprise the RFAS. Diffuse impacts from recreation use, livestock grazing, and other uses would continue into the future as described above. Some potential future land treatments in the CIAA could help to off-set the impacts from these uses. For example, noxious weed treatment would continue and would improve rangeland health.

Private lands in rural areas are being subdivided and sold for residential housing developments or commercial ventures as the area's population grows. Commercial and residential development is occurring on lands adjacent to the I-15 corridor and other split-estate lands. The level of private surface development activity in the general area suggests that additional residential development and improvements on split-estate lands immediately adjacent to the I-15 corridor can be projected to have similar development activity within the 10-year leasing period. Portions of some of these lands have been identified by Beaver County for acquisition for residential and commercial development.

### 4.3.3 Cumulative Impacts

As stated above, because this is a programmatic analysis the locations of any future exploration and development are not known; therefore, the discussion of cumulative impacts is presented at a programmatic, big-picture level. Future proposals will be examined for cumulative impacts at a site-specific level. Increased surface disturbance from the alternatives would impact soils, native vegetation, and wildlife habitat and increase the risk of noxious weed invasion and spread, which in turn can exacerbate the frequency and intensity of wildland fire. It is anticipated that the additional resource protection measures associated with the Proposed Action and No Leasing alternatives would reduce the impacts to specific resources and areas within the CIAA. Based on a continuation of drilling exploration wells within the Cedar City District – an analysis area consisting of about 5.7 million acres of BLM-managed land – at the rate of about three wells per year and assuming that the success rate for finding commercial quantities would be low based on past exploration and development, it is anticipated that a total of 310 acres of surface disturbance would occur over 10 years from oil and gas activities. This estimated level of development represents a disturbance of 0.005 percent of the land area. In reality even a smaller number of wells and associated surface disturbance has occurred since the 1988 supplemental analysis. The minimal amount of disturbance associated with the expected level of development in the 480,000-acre CIAA, in combination with Gold Book standard operating practices, BMPs, and additional measures that would minimize development impacts, would result in a negligible cumulative impact on the resources within the CIAA.

## 4.4 Irreversible and/or Irretrievable Commitments of Resources

Both short- and long-term effects could result from the activities analyzed in this EA. Short-term effects would occur for the duration of oil and gas exploration and production activities, whereas long-term refers to an indefinite period beyond the termination of oil and gas production. Most of the effects discussed in Chapter 4 are considered to be short-term because the main effects would occur during the construction and exploration phases and would be reduced through BMPs and mitigation measures. Irreversible commitments are those that cannot be reversed, except in the extreme long-term, and irretrievable commitments are those that are lost for a period of time. Leasing and subsequent development and extraction of hydrocarbons as a result of the proposed actions could represent an irreversible and irretrievable commitment of nonrenewable oil and gas resources. Conservation measures would be implemented where applicable and energy requirements may be improved by the project.

## 5.0 CONSULTATION/ COORDINATION

This chapter lists individual resource specialists within the BLM who participated in the preparation of this EA as well as other individuals/agencies/Tribes who contributed to this EA or who were contacted during its development. The issues analyzed in detail in Chapters 3 and 4 were produced through input from those identified below.

### 5.1 Agency and Tribal Consultation

The following agencies and Tribes were consulted in the development of this analysis.

| Agency or Tribe | Reason for Consultation | Consultation Status |
|---|---|---|
| U.S. Fish & Wildlife Service | Information on Consultation, Under Section 7 of the ESA (16 US Code [U.S.C.] 1531) | Consultation for California condor is underway for this project. The results are summarized below. |
| Utah State Historic Preservation Office | Consultation for undertakings, as required by the NHPA (16 U.S.C. 470) | Consultation with SHPO has been completed for this project. The results are summarized below. |
| Utah Division of Wildlife Resources | Consultation with this agency occurs on actions with the potential to affect wildlife resources | Consultation between this agency and the BLM occurs as an ongoing process. No specific consultation efforts were initiated as part of this project and no comments on the EA were received from this agency. |
| Hopi and Paiute Tribes | Native American Consultation based on an MOU Concerning Communication and Cooperation between the Tribes and the BLM | Consultation with the Tribes has occurred as part of the Government to Government Consultation Process. The results of this process are summarized below. |

The Draft EA was sent to the Paiute Indian Tribe of Utah and the Hopi Tribe on June 4, 2008; comments from the Tribes were received on June 5 and July 1, respectively. Both Tribes stated support for the No Leasing alternative for the Parowan Gap area and for the Proposed Action alternative – that allows a no surface occupancy limitation where circumstances warrant – for the remainder of the planning area. Both Tribes further stated support for an ethnographic study to determine the size of the core canyon area and concentrations of known cultural sites to be included in a historic district to preserve and protect all the significant cultural resources in the area. They recommended that no oil and gas leasing be allowed – through a leasing stipulation prohibiting any surface disturbance or deferral from leasing – for the entire Parowan Gap and Black Rock areas until the Paiute and Hopi Tribes, along with the BLM can adequately assess the extent of Native American values in the area or that appropriate long-term protections can be applied. The Hopi Tribe further stated their support for the Southern Utah Wilderness Alliance's nomination of the Parowan Gap area for designation as an Area of Critical Environmental Concern.

On June 6, 2008, a copy of the EA and a letter requesting concurrence with a no adverse effect determination was sent to the SHPO. In their letter, the BLM submitted that use of the programmatic EA for leasing would provide adequate protection for cultural resources in light of the cultural resources lease stipulation that is attached to all leases. The BLM also informed the SHPO that plans for an ethnographic study of the Parowan Gap and surrounding area would be

undertaken soon, the outcome of which could include a recommendation for the establishment of formal TCPs for the Gap area. Until such time as the study is completed, they have reservations about leasing in the vicinity of the Gap, as described in the EA. Additional information was requested by the SHPO and based on the letter and the additional information, the SHPO concurred with the determination of No Adverse Effect on June 25, 2008.

In May 2008, the BLM initiated Section 7consultation with the FWS for California condor. A lease notice was developed in coordination with the FWS that is likely to result in a determination of *"may affect, but not likely to adversely affect."* Consultation with FWS for the other T&E species considered in this EA was completed in May 2006 as part of a programmatic effort concerning existing BLM LUPs in Utah. This consultation effort, which analyzed BLM's most commonly permitted/approved activities and land uses and their relative potential to result in impacts to listed species, resulted in development of Conservation Measures for the majority of the T&E species considered in this EA. Incorporation of these measures into a proposal results in a greater likelihood that BLM will meet the standard of *"may affect, but not likely to adversely affect"* species listed under the ESA.

### 5.2 Public Involvement

In order to meet the intent of the CEQ regulations that require an "early and open process for determining the scope of issues to be addressed and for identifying significant issues related to a Proposed Action" (40 CFR 1501.7) several actions were taken to involve the public. This project was posted on the BLM's Environmental Notification Bulletin Board (ENBB) on April 16, 2008 and a notice of EA availability was posted on May 23, 2008. A 30-day public comment period was held – beginning on June 1, 2008 – with public comments accepted until June 30, 2008. Twelve comment letters were submitted during that time. A summary of the comments from the 30-day comment period is presented below. The BLM responses to these comments is contained in Appendix C. Relevant comments were incorporated into the EA.

| Commenter | Concern or Issue Raised |
|---|---|
| Paiute Indian Tribe of Utah | • Protection of cultural resources, particularly Parowan Gap and Black Rock area |
| Hopi Tribe | • Protection of cultural resources, particularly Parowan Gap and Black Rock area<br>• Designation of the Parowan Gap area as an Area of Critical Environmental Concern |
| National Trust for Historic Preservation | • Protection of cultural resources, particularly Parowan Gap |
| Anita Lahue | • Protection of cultural resources |
| Pamela and Quentin Baker | • Protection of cultural resources |
| The Dixie Archaeology Society | • Protection of cultural resources |
| Coalition to Preserve Rock Art | • Protection of cultural resources |
| Jon Gum and wife, residents of Utah | • Protection of cultural resources |
| Laurel Glidden, archaeologist and concerned citizen | • Protection of cultural resources, particularly Parowan Gap |
| Glen T. Nebeker, Western Land Services | • LUP amendment is needed to change leasing categories<br>• EA does not address changes that have occurred since the RMP was developed |
| WildEarth Guardians, Center for Native Ecosystems, Southern Utah Wilderness Alliance, Western Watersheds Project | • Protection of wildlife habitats and natural ecosystems<br>• Protection of special status species and their habitats including Utah prairie dog, greater sage-grouse, pygmy rabbit, Frisco |

| | |
|---|---|
| | buckwheat, Brian Head mountainsnail, and others<br>• Contribution of Proposed Action to global warming<br>• Inadequate justification for purpose and need for the Proposed Action |
| Southern Utah Wilderness Alliance | • Failure to adequately analyze a full range of alternatives including the No Leasing alternative<br>• Failure to include new information about current crucial value habitat for elk and mule deer<br>• Need to take a hard look at impacts of Milford Flat fire, such as closure of area to activity<br>• FLPMA compliance (action to prevent unnecessary and undue degradation of lands)<br>• Effects to air quality and global warming<br>• Protection of Granite Peak Wilderness Inventory Area<br>• Protection of Antelope Range wilderness characteristics<br>• Protection of Parowan Gap and Mineral Mountain ACEC nomination<br>• Cumulative effects from ORV recreation and grazing<br>• Protection of paleontological and cultural resources, including Parowan Gap<br>• Protection of soil resources<br>• Protection of vegetation resources<br>• Protection of riparian resources |

## 5.3 List of Preparers

The following BLM and non-BLM personnel participated in this analysis.

| Name | Title |
|---|---|
| **Bureau of Land Management, Utah State Office** | |
| Terry Catlin | Energy Team Lead |
| Scott Foss | Paleontologist |
| Julie Howard | Archaeologist |
| Chris Keefe | Biologist |
| Dave Mermejo | NRS Special Designations |
| Greg Thayn | NEPA Specialist |
| Teresa Thompson | Land Law Examiner |
| **Bureau of Land Management, Cedar City Field Office** | |
| Rebecca Bonebrake | Wildlife Biologist |
| Jessica Bulloch | Natural Resource Specialist |
| Elizabeth Burghard | Assistant Field Office Manager |
| Gardiner Dalley | Archaeologist |
| Andrew Dubrasky | GIS Coordinator |
| Craig Egerton | Natural Resource Specialist |
| Dan Fletcher | Rangeland Management Specialist |
| Ed Ginouves | Geologist |
| Gina Ginouves | NEPA Specialist |
| Chad Hunter | Wild Horse & Burro Specialist |
| Melanie Mendenhall | Natural Resource Specialist |
| Doug Page | Forester |
| Christine Pontarolo | Wildlife Biologist |
| Sherry Roché | Recreation Planner |
| Anne Stanworth | Public Affairs Specialist |
| Randy Trujillo | Associate Field Office Manager |
| Rachel Tueller | Native American Consultation |
| Rob Wilson | Realty Specialist |
| **Non-BLM Preparers (North Wind, Inc.)** | |
| Jace Fahnestock | Botanist, Consultant Project Lead |
| Kelly Green | NEPA Specialist |
| Scott Webster | Wildlife Biologist |

**References**


32 FR 4001. 1967. Native fish and wildlife; endangered species. U.S. Bureau of Sport Fisheries and Wildlife. Endangered and Threatened Wildlife. March 11, 1967. Federal Register 32:4001.

38 FR 14678. 1973. Conservation of Endangered Species and Other Fish and Wildlife. Amendments to Lists of Endangered Fish and Wildlife. Bureau of Sport Fisheries and Wildlife, Fish and Wildlife Service. June 4, 1973. Federal Register 38 (106):14678.

49 FR 22330. Endangered and Threatened Wildlife and Plants; Final Rule To Reclassify the Utah Prairie Dog as Threatened, With Special Rule To Allow Regulated Taking. FWS. May 29, 1984. Federal Register 49 (104):22330-22334.

58 FR 14248. 1993. Endangered and Threatened Wildlife and Plants; Final Rule to List the Mexican Spotted Owl as a Threatened Species. Fish and Wildlife Service. Federal Register 58 (140):14248-14271.

61 FR 54043. 1996. Endangered and Threatened Wildlife and Plants: Establishment of a Nonessential Experimental Population of California Condors in Northern Arizona; Final Rule. Fish and Wildlife Service. Federal Register 61 (201):54043-54060.

66 FR 8530. 2001. Endangered and Threatened Wildlife and Plants; Final designation of critical habitat for the Mexican Spotted Owl. Fish and Wildlife Service. Federal Register 66 (22):8530-8553.

66 FR 38611. 2001. Endangered and Threatened Wildlife and Plants; 12-Month Finding for a Petition to List the Yellow-billed Cuckoo (Coccyzus americanus) in the Western Continental United States. Notice of 12-month petition finding. Proposed Rule. Fish and Wildlife Service. July 25, 2001. Federal Register 66 (143):38611-38626.

69 FR 21484. 2004. Endangered and Threatened Wildlife and Plants; 90-day Finding for Petitions To List the Greater Sagegrouse as Threatened or Endangered. Notice of 90-day petition. Fish and Wildlife Service. April 21, 2004. Federal Register 69 (77): 21484-21494.

70 FR 29253. 2005. Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition To List the Pygmy Rabbit as Threatened or Endangered. Fish and Wildlife Service. May 20, 2005. Federal Register 70 (97):29253-29265.

70 FR 60885. 2005. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Southwestern Willow Flycatcher (*Empidonax traillii extimus)*. Fish and Wildlife Service. Federal Register 70 (201):60885-61009.

72 FR 7843. 2007. Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition To Reclassify the Utah Prairie Dog From Threatened to Endangered and Initiation of a 5-Year Review. Fish and Wildlife Service. February 21, 2007. Federal Register 72 (34):7843-7852.

72 FR 46537. 2007. Executive Order 13443 of August 16, 2007; Facilitation of Hunting Heritage and Wildlife Conservation. The White House. August 20, 2007. Federal Register 72 (160):46537-46538.

73 FR 1312. 2008. Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition To List the Pygmy Rabbit (Brachylagus idahoensis) as Threatened or Endangered. Fish and Wildlife Service. January 8, 2008 Federal Register 73 (5):1312-1313.

73 FR 10218. 2008. Endangered and Threatened Wildlife and Plants; Initiation of Status Review for the Greater Sage-Grouse (Centrocercus urophasianus) as Threatened or Endangered. Fish and Wildlife Service. February 26, 2008. Federal Register 73 (38):10218-10219.

73 FR 29776. 2008. Notice of Motor Vehicle Travel Closure and Restrictions on Public Lands in Beaver County, UT. May 22, 2008. Federal Register 73 (100):29776.

Aldridge, C.L., and M.S. Boyce. 2007, Linking occurrence and fitness to persistence: a habitat-based approach for endangered greater sage-grouse. Ecological Applications 17:508-526.

Berman, D. 2007. Dramatic effects of rising temps being seen on public lands — Interior. Earth News (Apr. 28, 2007). http://www.earthportal.org/news/

Bettinger, R.L. and M.A. Baumhoff. 1982. The Numic Spread: Great Basin Cultures in Competition *American Antiquity*, Vol. 47, No. 3 (Jul., 1982), pp. 485-503. pp19

Braun, C.E., O.O. Oedekoven, and C.L. Aldridge. 2002. Oil and gas development in western North America: effects on sagebrush steppe avifauna with particular emphasis on sage grouse. Transactions North American Wildlife and Natural Resources Conference 67:337-349.

Braun, C. E. 1998. Sage grouse declines in western North America: what are the problems? Proceedings of the Western Association of State Fish and Wildlife Agencies 78:139-156.

BLM. 1976. Cedar City District Oil and Gas Leasing Environmental Analysis Record (EAR). Cedar City Field Office, Cedar City, Utah.

BLM. 1984. Draft Cedar Beaver Garfield Antimony Resource Management Plan Final Environmental Impact Statement (CBGA RMP/EIS). Cedar City District, October 1984.

BLM. 1986. Record of Decision (ROD) for the Cedar Beaver Garfield Antimony Resource Management Plan Final Environmental Impact Statement. Cedar City District, October 1, 1986

BLM. 1988. Supplemental EA for Oil and Gas Leasing, Cedar City District (EA #UT-040-88-69). Cedar City Field Office, Cedar City, Utah.

BLM. 1996. Environmental Assessment, Noxious Weed Control Plan for the Cedar City Field Office EA UT-044-96-15. Cedar City Field Office, Cedar City, Utah.

BLM. 2006a. Best Management Practices for Raptors and Their Associated Habitats in Utah. BLM Utah State Office, Salt Lake City, Utah.

BLM. 2006b. BLM Utah NEPA Guidebook. [Online version available at http://www.blm.gov/ut/st/en/info/nepa.2.html]

BLM. 2006c. Conservation Measures from Land Use Plan-level Consultations for T&E Species of Utah. August 2006.

BLM. 2006d. Biological Assessment of Livestock Grazing in Bald Eagle, Mexican Spotted Owl, Southwestern Willow Flycatcher, California Condor, and Western Yellow-Billed Cuckoo Habitat on Bureau Of Land Management Lands, Beaver and Iron Counties, Utah.

BLM. 2007a. Final Programmatic Environmental Impact Statement Vegetation Treatments on Bureau of Land Management Lands in 17 Western States. Reno, Nevada. June 2007.

BLM. 2007b. Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development "Gold Book." Fourth Edition, Revised 2007.

Colorado Greater Sage-Grouse Conservation Plan Steering Committee. 2008. The Colorado Greater Sage-Grouse Conservation Plan. Colorado Division of Wildlife. Denver, CO. Unpublished Report.

Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage grouse populations and their habitats. Wildlife Society Bulletin 28:967-985.

Connelly, J.W., S.T. Knick, M.A. Schroeder, and S.J. Stiver. 2004. Conservation assessment of greater sage-grouse and sagebrush habitats. Western Association of Fish and Wildlife Agencies:·Cheyenne, Wyoming, USA.

Copeland, J.M. and R.E. Fike 1988. Fluted Projectile Points in Utah. Utah Archaeology.

D'Azevedo, W. (editor). 1986. Handbook of North American Indians Vol. 11 Great Basin. Washington D.C. Smithsonian Institution.

Doherty, K.E., D.E. Naugle, RL. Walker, J.M. Graham. 2008. Greater sage-grouse winter habitat selection and energy development. Journal of Wildlife Management. In Press.

Epstein, P.R., and E. Mills. 2005. Climate Change Futures: Health, Ecological and Economic Dimensions. The Center for Health and the Global Environment, Harvard Medical School.

Fish and Wildlife Service (FWS). 1984. California Condor Recovery Plan. Portland, Oregon. 110 pp.

FWS. 1991. Utah Prairie Dog Recovery Plan. U.S. Fish and Wildlife Service. Denver Colorado. 41pp

FWS. 1995. Recovery Plan for the Mexican Spotted Owl. Albuquerque, New Mexico. 172 pp.

FWS. 2002. Birds of conservation concern 2002. Division of Migratory Bird Management, Arlington, Virginia. 99 pp. Online version available at http://migratorybirds.fws.gov/reports/bcc2002.pdf

FWS. 2003. Change in the Utah Distribution Line for the Southwestern Willow Flycatcher. West Valley City, Utah. 4 pp.

FWS. 2004. Section 7 Consultation for Oil and Gas Lease Sales. December 16, 2004.

FWS. 2006. Intra-Service Consultation on the Issuance of a 10(a)(1)(B) Permit for the Cedar City Golf Course and Paiute tribal lands Habitat Conservation Plan. U.S. Fish and Wildlife Service Biological Opinion dated December 8, 2006.

Flinders, J.T. 1999. Pygmy rabbit: *Brachylagus idahoensis*, 681-683 in Wilson, D.E. and S. Ruff (editors), The Smithsonian Book of North American Mammals. Smithsonian Institute Press.

Flinders, J.T. 2007. Occurrence, habitat use, behavior, and potential limiting factors affecting the pygmy rabbit (*Brachylagus idahoensis*) in Utah. Utah endangered species mitigation fund: 2006-2007 annual report, ESMF project tracking number: 3205.

Flinders, J.T., J.E. Lee, R.T. Larsen. 2008. Occurrence, habitat use, behavior, and potential limiting factors affecting the pygmy rabbit (*Brachylagus idahoensis*) in Utah. Utah endangered species mitigation fund: 2007 annual report. ESMF project tracking number: 3205. Prepared for Recovery Programs Assistant Director, Department of Natural Resources, Endangered Species Mitigation Fund. Reporting Period: February 2007 through February 2008.

Forest Guardians 2003. Petition for a rule to reclassify the Utah prairie dog as Endangered within its historic range in southern Utah under the ESA. In the Office of Endangered Species, U.S. Fish and Wildlife Service, United States Department of Interior, Petition to the U.S. Fish and Wildlife Service to Reclassify The Utah Prairie Dog as an Endangered Species Under the Endangered Species Act, 16 U.S.C. § 1531 et Seq. (1973 as amended). Primary Petitioner Forest Guardians, February 2003.

Griswold, T., F.D. Parker, and V.J. Tepedino. 1997. The Bees of the San Rafael Desert: Implications for the Bee Fauna of the Grand Staircase-Escalante National Monument. Learning from the Land, Biology Section. Grand Staircase-Escalante National Monument Science Symposium Proceedings, Cedar City, Utah.

Hansen, J., L. Nazarenko, R. Ruedy, M. Sato, J. Willis, A. Del Genio, D. Koch, A. Lacis, K. Lo, S. Menon, T. Novakov, Ju. Perlwitz, G. Russell, G.A. Schmidt, and N. Tausnev, 2005: Earth's energy imbalance: Confirmation and implications. Science, 308, 1431-1435, doi:10.1126/science.1110252.

Heady, L.T., and J.W. Laundré. 2005. Habitat use patterns within the home range of pygmy rabbits (*Brachylagus idahoensis*) in southeastern Idaho. Western North American Naturalist 65:490-500.

Holloran, M.J. 2005. Greater sage-grouse (Centrocercus urophasianus) population response to natural gas field development in western Wyoming. Dissertation. University of Wyoming, Laramie, USA.

Holloran, M.J., B.J. Heath, A.G. Lyon, S.J. Slater, J.L. Kuipers, and S.H. Anderson. 2005. Greater sage-grouse nesting habitat selection and success in Wyoming. Journal of Wildlife Management 69: 638-649.

Holloran, M.J., R.C. Kaiser, and W.A. Hubert. 2007. Population response of yearling greater sage-grouse to the infrastructure of natural gas fields in southwestern Wyoming. Completion report. Wyoming Cooperative Fish and Wildlife Research Unit, Laramie, WY, USA.

Holmer, R.N. 1978. A Mathematical Typology for Archaic Projectile Points of the Eastern Great Basin. Ph.D. Dissertation, Department of Anthropology, University of Utah, Salt Lake City.

Intergovernmental Panel on Climate Change (IPCC). 2007: Summary for Policymakers. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M.Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf

Iron County Commission (ICC) and Utah Division of Wildlife Resources (UDWR). 1998. Habitat conservation plan for Utah prairie dogs in Iron County, Utah. Cedar City, Utah. 72 pp.

Janson, R.C. 2002. The pygmy rabbit from Utah to Montana. University of Montana. Cooperative Wildlife Research Unit. Missoula, MT.

Jennings, J.D. 1986. Prehistory. In *Great Basin*, edited by Warren L. D'Azevedo, pp. 113-119. Handbook of North American Indians, vol. 11, W. C. Sturtevant, general editor, Smithsonian Institution, Washington D.C.

Jones, G.T. and C. Beck. 1999. Paleoarchaic Archaeology in the Great Basin. In Models for the Millennium, edited by Charlotte Beck, pp. 83-95. University of Utah Press, Salt Lake City.

Kaiser, R.C. 2006. Recruitment by greater sage-grouse in association with natural gas development in western Wyoming. Thesis. University of Wyoming. Laramie, USA.

Kotliar, N.B. 2000. "Application of the new keystone-species concept to prairie dogs: how well does it work?" Conservation Biology 14(6): 1715-1721.

Kotliar, N.B., B.W. Baker, A.D. Whicker, G. Plumb. 1999. "A critical review of assumptions about the prairie dog as a keystone species." Environmental Management 24 (2): 177-192.

Lyon, A.G. and S.H. Anderson. 2003. Potential gas development impacts on sage grouse nest initiation and movement. Wildlife Society Bulletin 31:486-491.

Madsen, D.B. and S.R. Simms. 1998. The Fremont Complex: A Behavioral Perspective Journal of World prehistory volume 12, Number 3, September 1998.

McDonald, K.P. 1993. Analysis of the Utah prairie dog recovery program, 1972-1992. Publication No. 93-16, Utah Division of Wildlife Resources.

McDonald, K.P., and R.A. Bonebrake. 1994. Evaluation of BLM approved transplant sites for Utah prairie dogs. Unpublished Rept. Division of Wildlife Resources, 21 pp.

Menkens, G.E., and S.H. Anderson. 1985. The effects of vibroseis on white-tailed prairie dog populations on the Laramie Plains of Wyoming. Report to the U.S. Bureau of Land Management, Interagency Agreement #WY910-IA2-1187, 15 pp.

Miller, F.R. and J. A. Rose. 1999. Fire History and Western Juniper Encroachment in Sage-Brush Steppe. Journal of Range Management. 1999, Vol. 52, N 6, Pp. 550-559.

Moynahan B. J. 2004. Landscape-scale factors affecting population dynamics of greater sage-grouse (Centrocercus urophasianus) in northcentral Montana, 2001-2004. Dissertation, The University of Montana. Missoula, USA.

National Science and Technology Council 2008. Scientific Assessment of the Effects of Global Change on the United States: A Report of the Committee on Environment and Natural Resources National Science and Technology Council, May 2008. http://www.climatescience.gov/Library/scientific-assessment/Scientific-AssessmentFINAL.pdf

NatureServe. 2008. NatureServe Conservation Information for *Oreohelix parawanensis*. http://www.natureserve.org

Naugle, D. E., R L. Walker, and K. E. Doherty. 2006a. Sage-grouse population response to coal-bed natural gas development in the Powder River Basin: interim progress report on region-wide lek-count analyses. Unpublished Report, University of Montana, Missoula, USA.

Naugle, D. E., R L. Walker, and K. E. Doherty. 2006b. Sage-grouse winter habitat selection and energy development in the Powder River Basin: completion report on. Unpublished Report, Wildlife Biology Program, College of Forestry and Conservation, University of Montana, Missoula, Montana, USA. 24 JUNE 2006

Neff, J. C., A. P. Ballantyne, G. L. Farmer, N. M. Mahowald, J. L. Conroy, C. C. Landry, J. T. Overpeck, T. H. Painter, C. R. Lawrence, and R. L. Reynolds. 2008. Increasing eolian dust deposition in the western United States linked to human activity. *Nature Geoscience* 1, 189 - 195 (2008) Published online: 24 February 2008.

Norman, V.G. 1996. The Parowan Gap – Nature's Perfect Observatory. Cedar Fort, Utah.

Oliver, G.V. and W.R. Bosworth, III. 2002. Oreohelices of Utah, II. Extant status of the Brian Head mountainsnail, *Oreohelix parawanensis*, Gregg, 1941 (Stylommatophora: Oreohelicidae). Western North American Naturalist, 62(4): 451-457.

Revkin, A.C. 2008. In Greenland, Ice and Instability. New York Times. January 8, 2008. http://www.nytimes.com/2008/01/08/science/earth/08gree.html?_r=1&hp=&pagewanted=print&oref=slogin

Rocky Mountain Climate Organization (RMCO) and Natural Resources Defense Council (NRDC). 2008. Hotter and Drier: The West's Changed Climate. by the RMCO and the NRDC. http://www.nrdc.org/globalWarming/west/west.pdf

Romin, L.A. and J.A. Muck. 2002. Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances. U.S. Fish and Wildlife Service, Utah Field Office, Salt Lake City. May 1999.

Sogge, M.K., T.J. Tibbitts and S.J. Sferra. 1993. Status of the southwestern willow flycatcher along the Colorado River between Glen Canyon Dam and Lake Mead – 1993. Summary Report. National Park Service Cooperative Park Studies Unit/Northern Arizona University, USDI Fish and Wildlife Service, and Arizona Game and Wildlife Department report. 69 pp.

Sogge, M.K., R.M. Marshall, S.J. Sferra and T.J. Tibbitts. 1997. A southwestern willow flycatcher natural history summary and survey protocol. Technical Report NPS/NAUCPRS/NRTR-97/12, National Park Service, Colorado Plateau Research Station, Flagstaff, Arizona. 40 pp.

Stettler, H. and Seddon, M. 2005. From Hunters to Homesteaders: Recent Encounters with Past Communities in Utah's West Desert, edited by Heather K. Stettler and Matthew T. Seddon, pp. 13. Published by Kern River Gas Transmission Company, SWCA, Inc. Environmental Consultants, Alpine Archaeological Consultants, Inc., Salt Lake City, Utah.

Tausch, R.J., N.E. West and A.A. Nabi. 1981. Tree age and dominance in great basin pinyon-juniper woodlands. J Range Manage. 34:259-264.

Utah Prairie Dog Recovery Implementation Team. 1997. Utah prairie dog interim conservation strategy. Members of team in collaboration with Dr. Mark Ritchie, Utah State University. August 15, 1997.

Utah Department of Environmental Quality-Division of Air Quality (UDEQ-DAQ) 2007 Annual Report, UDEQ-DAQ, February 2008. Available, as of this publication, at http://www.airquality.utah.gov/Public-Interest/annual-report/2007_Annual%20Report%20Final.pdf, additional information regarding ozone was found at http://www.airquality.utah.gov/Public-Interest/about_pollutants/about_ozone.htm

Utah Department of Wildlife Resources (UDWR). 2002. Strategic Management Plan for Sage-grouse; State of Utah, Division of Wildlife Resources; June 11, 2002; Publication Number 02-20.

UDWR. 2008a. Yellow-billed Cuckoo fact sheet. Accessed March 2008 http://dwrcdc.nr.utah.gov/rsgis2/Search/Display.asp?FlNm=coccamer

UDWR. 2008b. Pygmy rabbit fact sheet. Accessed March 2008 http://dwrcdc.nr.utah.gov/rsgis2/Search/Display.asp?FlNm=bracidah

UDWR. 2008c. State of Utah Department of Natural Resources Dark Kangaroo Mouse Fact Sheet and Distribution Map. Accessed March 24, 2008. http://dwrcdc.nr.utah.gov/rsgis2/search/Display.asp?FlNm=micrmega

U.S. Climate Change Science Program 2008. The Effects of Climate Change on Agriculture, Land Resources, Water Resources, and Biodiversity in the United States, U.S. Climate Change Science Program Synthesis and Assessment Product 4.3. U.S. Climate Change Science Program and the Subcommittee on Global Change Research. http://www.climatescience.gov

U.S. Geologic Survey (USGS). 2007. Impacts of Climate Change on Water and Ecosystems in the Upper Colorado River Basin. August 2007.

U.S. Department of Agriculture (USDA). 2007. The Effects of Climate Change on Agriculture, Land Resources, Water Resources and Biodiversity, Public Review Draft of Synthesis and Assessment Product 4.3 (Sep. 11, 2007), http://www.climatescience.gov/Library/sap/sap4-3/public-review-draft/default.htm

Walker, R.L., D.E. Naugle, and K.E. Doherty. 2007. Greater sage-grouse population response to energy development and habitat loss. Journal of Wildlife Management 71:2644-2654.

Weiss, N.T., and B.J. Verts. 1984. Habitat and Distribution of Pygmy Rabbits *(Sylvilagus idahoensis)* in Oregon. Great Basin Naturalist 44: 563-571.

Western Regional Climate Center (WRCC). 2008. Climate Summaries for the West. http://www.wrcc.dri.edu

WildEarth Guardians. 2007. Petition Requesting Listing of 206 Species in the Mountain Prairie Region. Submitted to the U.S. Secretary of Interior and the U.S. Fish and Wildlife Service by WildEarth Guardians, July 24, 2007.

WildEarth Guardians. 2008. Petition Requesting Emergency Listing of 32 Species under the Endangered Species Act. Submitted to the U.S. Secretary of Interior and the U.S. Fish and Wildlife Service on June 12, 2008, by WildEarth Guardians.

World Health Organization (WHO). 2002. World Health Report 2002: Reducing Risks, Promoting Healthy Life.

Wright, H.A., L.E. Neuenschwander and C. Britton. 1979. The role and use of fire in sa ge brus hgrassland and pinyon-juniper plant communities : a state-of-the-art review. USDA Forest Service, General Technical Report INT-58, Intermountain Forest and Range Experiment Station, Odgen, UT.

Young, D.K. and P. Sawyer, 1981, Influence of Seismic Vibrators on Utah Prairie Dog (*Cynomys parvidens*) Burrows. USDI Bureau of Land Management Staff Report.

# APPENDIX A:

## Interdisciplinary Team Analysis Record Checklist

**Project Title**: Analysis of oil and gas leasing in eastern portion of Cedar City Field Office

**NEPA Log Number**: UT-040-08-036

**Project Leader**: Terry Catlin

**Date**: April 8, 2008

**DETERMINATION OF STAFF**: NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for significant impact analyzed in detail in the EA

| Deter-mination | Resource | Rationale for Determination* | Signature |
|---|---|---|---|
| | | **CRITICAL ELEMENTS** | |
| NI | Air Quality | Both Beaver and Iron Counties are in attainment of the National Ambient Air Quality Standards (NAAQS) for all pollutants. Currently, air quality in and surrounding the planning area meets State Department of Environmental Quality and the Division of Air Quality Standards. The proposed action would not exceed the level of activity projected in the RFD. While there would be some differences between the alternatives, all actions analyzed in the EA would adhere to current air quality standards and emissions would be within established limits.<br><br>Given the low level of drilling and other activity described in the RFD scenario, only minimal emissions are anticipated and effects to air quality are expected to be negligible. The following project activities and sources would produce emissions: Well pad and road construction: earth-moving equipment fugitive dust, earth-moving equipment exhaust, and mobile source tailpipe emissions on access roads; Drilling: mobile source tailpipe emissions, fugitive dust emissions on access roads, and drill rig engine exhaust; Completion: mobile source tailpipe emissions, fugitive dust emissions on access roads, well venting emissions, and well fracturing engine emissions; Well pad operation: separator heater emissions, and flashing, working, and breathing emissions from condensate tanks; Gas processing: central dehydrator emissions, mobile source tailpipe emissions, and fugitive dust emissions on access roads; and Operation and maintenance: mobile source tailpipe emissions and fugitive dust emissions on access roads.<br><br>The pollutant emitted in the greatest quantities during well development would be $PM_{10}$ from earthmoving operations and travel upon unpaved roads. Mineral aerosols from dust are generated from wind erosion of surface soils and can result in an increase in inputs of K, Mg, Ca, N and P to the ecosystem (Neff et al. 2008). Impacts from ground disturbing activities would be localized and temporary in nature and would decrease significantly with distance from the immediate activity with overall $PM_{10}$ emission spread out over a large area. The GOLD Book contains adequate enforceable mitigation measures to assure no adverse impacts on air quality would occur in the affected area. BLM will utilize BMPs and site specific mitigation measures, when appropriate, based on site specific conditions, to reduce emissions and enhance air quality. Because the BLM does not know the specific locations or plans for any future leases, they do not have the ability at this time to determine the effects. The BLM's draft air resources guidance states that quantitative | C. Egerton |

| Deter-mination | Resource | Rationale for Determination* | Signature |
|---|---|---|---|
| | | dispersion modeling is inappropriate in the absence of detailed emission data, especially source location information. Project specific analyses will consider use of quantitative air quality analysis methods (i.e., modeling), when appropriate as determined by BLM, in consultation with state, federal, and tribal entities.<br><br>BLM will continue to work cooperatively with state, federal, and tribal entities in developing air quality assessment protocols to address regional air quality issues and with the Utah Airshed Group to manage emissions from wildland and prescribed fire activities. The BLM will also continue to exercise its land management authority and responsibility to analyze potential air quality impacts, to set levels-of-concern and desired-future-conditions, and to support air resources monitoring. | |
| NP | Areas of Critical Environmental Concern | There are currently no ACECs in the planning area. However, a nomination for the Parowan Gap ACEC and Mineral Mountain ACEC was submitted by SUWA on June 30, 2008. As a result, the BLM will now or at some point in the future determine whether the Parowan Gap and Mineral Mountain ACEC nominations meet FLPMA's relevance and importance criteria. | D. Mermejo |
| PI | Cultural Resources | Cultural resources occur within the planning area and could be impacted by soil disturbing activities. A review of the field office files will be conducted as part of the EA process to determine the presence of cultural resources for the entire planning area. Cultural resource surveys conducted on previously examined portions of the planning area have indicated a low to moderate density of cultural properties. The BLM may require modification to exploration or development proposals to protect discovered properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated. Based on the ability to avoid or otherwise mitigate potential impacts to cultural properties, determinations of "No Historic Properties Affected" have been made to the Utah SHPO in the past based on the conclusion that while sites exist, there is nothing that would preclude the siting of a single well on an individual parcel. The issue is carried forward in the EA to determine potential for impacts to this resource for the whole planning area. Consultation with Utah SHPO would occur in conjunction with the NEPA process. | G. Dalley |
| NI | Environmental Justice | Executive Order 12898, issued on 11 February 1994, mandates federal agencies to assess whether their actions have disproportionate environmental and human health impacts on minority and low-income populations. The intent of this order is to ensure that all communities, including minority, low-income, or federally recognized Tribes, live in a safe and healthful environment. Leasing these lands would not cause any disproportionately high and adverse human health or environmental effects on minority populations, low-income populations, or Native American Tribes. No groups of concern would be affected. | E. Ginouves |
| NI | Farmlands (Prime or Unique) | Analysis of impacts to prime or unique farmlands (defined in 7 CFR 657), as defined in the Farmland Protection Policy Act (7 U.S.C. 4201 et seq.), is conducted in an attempt to minimize the unnecessary and irreversible conversion of farmland to nonagricultural uses. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (e.g., cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water). It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. Unique farmland is land other than prime farmland that is used for the production of specific high value food and fiber crops. It has the special | C. Egerton |

| Deter-mination | Resource | Rationale for Determination* | Signature |
|---|---|---|---|
| | | combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods.<br><br>Natural Resources Conservation Service (NRCS) soil surveys identify soil types within the Cedar City Field Office that meet the criteria for designation as prime farmlands. There are scattered parcels of public land throughout the planning area that have been designated as prime and unique farmland. These soils are classified as prime farmland only when they are irrigated. The planning area also includes split-estate lands which could contain relatively extensive acreages of important, prime or unique farmlands. However, given the low degree of anticipated exploration and development (three wells per year for the next 10 years with a total surface disturbance of 310 acres), impacts to prime or unique farmlands are expected to be negligible. | |
| NI | Floodplains | The planning area includes areas that are within 100 year floodplains. The CBGA RMP lacks specific stipulations which prohibit surface occupancy for the protection of floodplains and for the protection of oil and gas facilities which could be located within floodplains. However, potential lessees/operators would be given notice through the appropriate channels that locations having floodplains and riparian/aquatic areas would be leased with a NSO stipulation or lease notice UT-LN-59 to protect these areas. UT-LN-59 states that surface occupancy or use is subject to the Floodplain Executive Order No. 11988 and modifications to the Surface Use Plan of Operations may be required for the protection of the floodplains in accordance with the executive order as follows: If the only practical alternative requires the sitting in the floodplain, the action would be modified in order to minimize potential harm to or within the floodplain; reduce the risk of flood loss; minimize the impact of floods on human safety, health, and welfare; and, restore and preserve the natural and beneficial values served by floodplains.<br><br>These restrictions would be implemented on an individual lease basis and would serve as a condition of approval for exploration and development. At a minimum, BLM would require relocation of proposed operations by up to 200 meters to provide protection for the resource in accordance with 43 CFR Subpart 3101.1-2, “Surface Use Rights” resulting in an avoidance of impacts to floodplains. | C. Egerton |
| PI | Invasive, Non-native Species | The BLM coordinates with County and local governments to conduct an active program for control of invasive, non-native species. Leasing the parcels could lead to soil disturbance related to development on the leases and the roads leading to them resulting in an increase in invasive, non-native species. Standard operating procedures such as washing of vehicles and annual monitoring and spraying along with site specific mitigation should be sufficient to prevent the spread or introduction of invasive, non-native species. The potential for spread of invasive species is analyzed in the EA. | J. Bulloch |
| PI | Native American Religious Concerns | Some previously examined locations in the planning area have TCPs important to maintaining the cultural identity of the Paiute and Hopi Tribes. Executive Order 13007, Indian Sacred Sites, states that in order to protect and preserve Indian religious practices, the agency with responsibility for the management of federal lands shall, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sacred sites.<br><br>The Parowan Gap has been identified as a location where religious practices have historically taken place, and it is believed that the Paiute | R. Tueller |

| Deter-mination | Resource | Rationale for Determination* | Signature |
|---|---|---|---|
| | | continue those practices today. In order to meet agency responsibilities under the NHPA and EO 13007, areas surrounding the Parowan Gap need to be formally evaluated as a TCP and sacred localities need to be identified. At this time no other TCPs or sacred localities are known.<br><br>Per IM 2005-03, dated October 5, 2004, Cultural Resources and Tribal Consultation for Fluid Mineral Leasing, all leases issued subsequent to October 5 2004 will include the following Cultural Resource Protection – Lease Stipulation: This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated. | |
| NP | Threatened, Endangered or Candidate Plant Species | Currently there are no listed threatened, endangered, or candidate plant species present in the planning area. | C. Pontarolo |
| PI | Threatened, Endangered or Candidate Animal Species | Locations within the planning area contain habitat for threatened and endangered species. Because occurrence of these species on all locations was not known at the time of the RMP the potential for effects to these species is analyzed in the EA. | R. Bonebrake |
| NI | Wastes (hazardous or solid) | Drilling fluids, produced waters, and other wastes associated with the exploration, development or production of crude or natural gas are excluded as a hazardous waste under 40 CFR 261.4(b)(4). BLM standard approval for oil and gas operations would require that the operators be subject to required coordination with and/or permitting from applicable local and state agencies, and otherwise conform to applicable state and federal laws and regulations when conducting activities involving the generation, storage, or transport of hazardous materials. Additionally, federal and state operating and reporting requirements include provisions for the cleanup and mitigation of releases. Site specific mitigation and best management practices, employed to limit potential negative impacts to the environment from waste generating activities, would be sufficient to ensure proper containment, transport and disposal of solid or toxic waste if any are required or generated. | E. Ginouves |
| NI | Water Quality (drinking/ ground) | The Federal Water Pollution Control Act, as amended, requires that prior to the issuance of a federal permit or lease that the applicant furnish a certification from the state that there is a reasonable assurance that activities under the lease will not violate applicable water quality standards. As recognized in previous NEPA documents, standard operating procedures and site specific mitigation would be sufficient to isolate and protect all usable water zones. The SOPs include the requirements for disposal of produced water contained in Onshore Oil and Gas Order (OOGO) No. 7 and the requirements for drilling operations contained in OOGO No. 2.<br><br>In the event a well would be proposed to be located within a domestic water well protection zone, BLM would require relocation of proposed operations by up to 200 meters to provide protection for the resource. | C. Egerton |
| NI | Wetlands/ Riparian Zones | Potential impacts to riparian resources from oil and gas development – including road construction, increased erosion and dust from roads, sludge pits, and, waste water pits – could result if development occurred | R. Bonebrake |

| Deter-mination | Resource | Rationale for Determination* | Signature |
|---|---|---|---|
| | | in riparian areas. The BLM is charged through Executive Order 11990, Protection of Wetlands, May 24, 1977, with protection of wetlands/riparian zones. Because the planning area includes areas that contain riparian zones, potential lessees/operators would be given notice through the appropriate channels that locations having wetland/ riparian zones would be leased with a NSO stipulation or would at a minimum require relocation of proposed operations by up to 200 meters to provide protection for the resource in accordance with 43 CFR Subpart 3101.1-2, "Surface Use Rights" resulting in an avoidance of impacts to protect these areas. These restrictions would be implemented on an individual lease basis and would serve as a condition of approval for exploration and development.<br><br>The objective of the Utah BLM Riparian Management Policy (IM 2005-091) is to establish an aggressive riparian area management program that will identify, maintain, restore, and/or improve riparian values to achieve a healthy and productive ecological condition for maximum long-term benefits in order to provide watershed protection while still preserving quality riparian dependent aquatic and terrestrial species habitats and, as appropriate, allow for reasonable resource uses. The policy states that no new surface disturbing activities will be allowed within 100 meters of riparian areas unless it can be shown that: 1) there are not practical alternatives or, 2) all long term impacts can be fully mitigated or, 3) the activity will benefit and enhance the riparian area. The proposed action contains a controlled surface use measure for the protection of riparian resources that follows the guidance in the Riparian Management Policy. | |
| NP | Wild and Scenic Rivers | There are no designated or eligible segments of wild and scenic rivers in the Cedar City Field Office area. | D. Mermejo |
| NI | Wilderness | There are no designated wilderness areas in the Cedar City Field Office area. Wilderness study areas are excluded from consideration in this EA because leasing is prohibited in these areas. No activities are proposed on these lands. | D. Mermejo |

| OTHER RESOURCES / CONCERNS** | | | |
|---|---|---|---|
| NI | Rangeland Health Standards and Guidelines | Water quality, vegetation, threatened & endangered species habitat and other components of ecological conditions that are considered in Rangeland Health Standards and Guides have been analyzed in previous NEPA documents pertaining to the planning area. Given the low degree of anticipated exploration and development and application of standard operating procedures, it is concluded that Rangeland Health Standards would not be affected substantially by leasing. | D. Fletcher |
| NI | Livestock Grazing | Given the low degree of anticipated exploration and development and application of standard operating procedures it is concluded that livestock grazing operations would not be affected by leasing. The amount of disturbance would be such that sufficient land would be unaffected and therefore would remain available for livestock grazing. Any range improvements such as fences and cattleguards that would be affected would be replaced or restored and disturbed areas would be reclaimed. | D. Fletcher |
| NI | Woodland / Forestry | Given the low degree of anticipated exploration and development (three wells per year for the next 10 years with a total surface disturbance of 310 acres), low density of well placement, and application of standard operating procedures, along with the ability to require relocation of proposed operations by up to 200 meters, it is anticipated that any impacts to woodland/forestry resources would be negligible. | D. Page |

| | | | |
|---|---|---|---|
| PI | Vegetation including Special Status Plant Species other than FWS candidate or listed species | Because vegetation would be lost within the construction areas of pads, roads, and rights-of-ways, this issued is analyzed in this EA. Given the low degree of anticipated exploration and development (three wells per year for the next 10 years with a total surface disturbance of 310 acres) and application of standard operating procedures, potential impacts on vegetation are anticipated to be minor.<br><br>Based on a past review of literature and existing records for some locations in the CCFO it has been determined that there is a potential for special status plant species within the planning area therefore this issue is analyzed in this EA. Incorporation of the special status species lease notice would mitigate potential impacts to special status plants. | D. Fletcher<br><br>R. Bonebrake |
| PI | Fish and Wildlife Including Special Status Species other than FWS candidate or listed species (e.g., Migratory birds) | Portions of the planning area contain crucial wildlife habitat and habitat for BLM sensitive animal species therefore potential impacts to these species are analyzed in this EA. However, standard operating procedures (including reclamation to reestablish habitat) would mitigate impacts to wildlife and areas within crucial wildlife habitat would be leased with a special stipulation that may restrict drilling operations during the crucial period, in conformance with the CBGA RMP. A special status species lease notice is recommended for parcels to mitigate impacts to sensitive species and lease notices are also recommended for parcels containing crucial habitat that were not identified in the RMP. | R. Bonebrake |
| PI | Soils | Because impacts to soils could occur during construction, operation, and rehabilitation phases of lease development and activities related to road building and pad development, this issue is analyzed in the EA. Given the low degree of anticipated exploration and development (three wells per year for the next 10 years with a total surface disturbance of 310 acres) and application of standard operating procedures it is anticipated that potential impacts on soils would be low. | C. Egerton |
| PI | Recreation | Because leasing in the planning area could have impacts on recreation in developed recreation areas or elsewhere, this issue is analyzed in the EA. Given the low degree of anticipated exploration and development (three wells per year for the next 10 years with a total surface disturbance of 310 acres) and application of standard operating procedures, including the ability to move operations up to 200 meters, it is anticipated that potential impacts to recreation would be low. | S. Roche |
| PI | Visual Resources | Because leasing in the planning area could lead to the degradation of visual quality values due to the increase in activity associated with oil and gas operations, this issue is analyzed in the EA. Given the low degree of anticipated exploration and development (three wells per year for the next 10 years with a total surface disturbance of 310 acres) and application of standard operating procedures, including the ability to move operations up to 200 meters, it is anticipated that Visual Resource Class objectives would be maintained. | S. Roche |
| NI | Geology / Mineral Resources/ Energy Production | Existing NEPA documents address oil and gas operations and the impacts that could result from exploration through development. Other recorded or authorized mineral-related uses could be present on some proposed parcels, and any conflicts between fluid mineral operations and other mineral operations would be resolved at the time of any application related to fluid mineral exploration and development. | E. Ginouves |
| PI | Paleontology | Paleontological resources are known to occur in the planning area, although at low density. Because adequate analysis for paleontological resources is lacking, a standard minimal paleontological stipulation and the ability to move operations up to 200 meters will reduce the impact to paleontological resources. A paleontological lease notice is recommended. | S. Foss |
| NI | Lands / Access | Rights-of-way in proposed operation areas would not be affected because application of standard operating procedures, including the ability to move operation up to 200 meters, would ensure that communication sites, water projects, power lines, etc. would be avoided, | R. Wilson |

| | | | |
|---|---|---|---|
| | | restored or replaced. | |
| NI | Fuels / Fire Management | Fuels management would not be affected by leasing and application of standard operating procedures and safety measures would minimize the risk of inadvertent ignition. Therefore impacts to fire or fuels management are expected to be negligible. | M. Mendenhall |
| PI | Socio-economics | Given the low degree of anticipated exploration and development (three wells per year for the next 10 years with a total surface disturbance of 310 acres) socio-economic impacts are expected to be negligible. However, because the planning area includes split-estate lands and lands that have been identified by Beaver and Iron Counties for acquisition to accommodate residential and commercial growth an analysis of socio-economics is included in this EA. | E. Ginouves T. Catlin |
| NI | Wild Horses and Burros | The Chloride Wild Horse Herd Management Area (HMA) occurs in the planning area. Given the low degree of anticipated exploration and development (three wells per year for the next 10 years with a total surface disturbance of 310 acres) and application of standard operating procedures including reclamation to reestablish wild horse habitat it is concluded that wild horses within the HMA would experience very short durations (1-2 day) of disturbance. This would not be any more disturbance than causal use of the area for recreation use and would not affect the wild horses in the area. | C. Hunter |
| PI | Wilderness characteristics | There are three areas within the planning area that have been proposed to possess wilderness characteristics by special interest groups. In 1999 BLM inventoried and determined there were wilderness characteristics in the Granite Peak area of the Mineral Mountains and no wilderness characteristics in the Spring Creek Canyon WSA area. The other area that has been proposed as possessing wilderness characteristics by the Utah Wilderness Coalition has been tentatively identified as Antelope Hills. To date, BLM has not conducted a wilderness character review of this area. In accordance with existing land use plans, non WSA lands with wilderness characteristics may be managed to protect and/or preserve some or all of the characteristics identified during wilderness characteristics inventories. The level of management of wilderness characteristics depends upon resource prescriptions within the existing land use plan. Potential leasing impacts to wilderness characteristics will be analyzed for the Granite Peak area, analysis for wilderness characteristics in the Antelope Hills area will not be conducted in this EA. | D. Mermejo |

**FINAL REVIEW:**

| Reviewer Title | Signature | Date | Comments |
|---|---|---|---|
| NEPA / Environmental Coordinator | | | |
| Authorized Officer | | | |

# APPENDIX B:

## Recommended Resource Protective Measures for the Eastern Portion of the Cedar City Field Office

| |
|---|
| **TIMING LIMITATION – CRUCIAL WINTER MULE DEER AND ELK HABITAT** |
| No surface use or otherwise disruptive activity would be allowed from November 1 through May 15 within identified crucial winter mule deer and/or elk habitat. |
| **TIMING LIMITATION – CRUCIAL ELK CALVING AND DEER FAWNING HABITAT** |
| No surface use or otherwise disruptive activity would be allowed from May 1 through June 29 within identified crucial elk calving and/or mule deer fawning habitat. |
| **TIMING LIMITATION – PRONGHORN FAWNING HABITAT** |
| No surface use or otherwise disruptive activity would be allowed from May 1 through June 29 within crucial/important pronghorn fawning habitat. |
| **TIMING LIMITATION – PRONGHORN WINTER HABITAT** |
| No surface use or otherwise disruptive activity would be allowed from December 1 through April 15 within pronghorn winter habitat. |
| **TIMING LIMITATION – GREATER SAGE-GROUSE NESTING AND EARLY BROOD-REARING** |
| No surface disturbing or otherwise disruptive activity would be allowed from February 15 through August 1within 2.0 miles of an occupied lek, or in mapped and identified greater sage-grouse nesting and early brood-rearing habitat within 4.0 miles of an active lek. |
| **TIMING LIMITATION – GREATER SAGE-GROUSE WINTER CONCENTRATION AREAS** |
| No surface disturbing or otherwise disruptive activity would be allowed from November 15 through March 1 in identified greater sage-grouse winter concentration areas. |
| **TIMING LIMITATION – WATERFOWL** |
| No surface disturbing or otherwise disruptive activity would be allowed from March 15 through July 15 within 0.25 mile of the Minersville and Newcastle reservoirs, Quichapa Lake, or identified surface waters with nesting waterfowl.<br><br>No surface disturbing or otherwise disruptive activity would be allowed from November 1 through March 15 within 0.25 mile of the Minersville and Newcastle reservoirs, Quichapa Lake, or identified surface waters with concentrations of wintering waterfowl. |
| **TIMING LIMITATION – SOUTHWESTERN WILLOW FLYCATCHER** |
| No surface use or otherwise disruptive activity would be allowed from May 1 through August 15 within southwestern willow flycatcher breeding areas within 0.25 mile of occupied breeding habitat. |
| **TIMING LIMITATION – YELLOW-BILLED CUCKOO** |
| No surface use or otherwise disruptive activity would be allowed from May 1 through August 15 which would disrupt yellow-billed cuckoo breeding activities within 0.25 mile of occupied breeding habitat. |
| **TIMING LIMITATION – GREATER SAGE-GROUSE LEKS** |
| No surface use or otherwise disruptive activity would be allowed from February 15 through June 1 which would disrupt sage-grouse breeding activities within 0.5 mile of an active lek. |
| **TIMING LIMITATION – BALD EAGLE WINTER ROOST SITES** |
| No surface use or otherwise disruptive activity would be allowed from November 1 through March 31 which would disrupt bald eagle roosting activities within 0.5 mile of known roosts, unless the area has been surveyed according to protocol and determined to be unoccupied. |
| **TIMING LIMITATION – BALD EAGLE NEST SITES** |
| No surface use or otherwise disruptive activity would be allowed from January 1 through August 31which would disrupt bald eagle breeding activities within 1 mile of any known bald eagle nesting site. |
| **TIMING LIMITATION – FERRUGINOUS HAWK NEST SITES** |
| No surface use or otherwise disruptive activity would be allowed from March 1 through August 1 which would disrupt ferruginous hawk breeding activities within 0.5 mile of an occupied nest. |

| |
|---|
| **TIMING LIMITATION – GOLDEN EAGLE NEST SITES** |
| No surface use or otherwise disruptive activity would be allowed from January 1 through August 31 which would disrupt golden eagle breeding activities within 0.5 mile of an occupied nest. |
| **TIMING LIMITATION – PEREGRINE FALCON NEST SITES** |
| No surface use or otherwise disruptive activity would be allowed from February 1 through August 31 which would disrupt peregrine falcon breeding activities within 1 mile of an occupied nest. |
| **TIMING LIMITATION – BURROWING OWL HABITAT** |
| No surface use or otherwise disruptive activity would be allowed from March 1 through August 31 which would disrupt burrowing owl breeding activities within 0.25 mile of an occupied nest. |
| **CONTROLLED SURFACE USE – GREATER SAGE-GROUSE LEKS** |
| No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 0.5 mile of any active greater sage-grouse lek. |
| **CONTROLLED SURFACE USE – BALD EAGLE NEST SITES** |
| No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 0.5 mile of any known bald eagle nest site, which has been active within the past 3 years. |
| **CONTROLLED SURFACE USE – BALD EAGLE WINTER ROOST SITES** |
| No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 0.5 mile of known bald eagle winter roost areas. |
| **CONTROLLED SURFACE USE – FERRUGINOUS HAWK NEST SITES** |
| No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 0.5 mile of known ferruginous hawk nests, which have been active within the past 3 years. |
| **CONTROLLED SURFACE USE – GOLDEN EAGLE NEST SITES** |
| No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 0.5 mile of known golden eagle nests, which have been active within the past 3 years. |
| **CONTROLLED SURFACE USE – PEREGRINE FALCON NEST SITES** |
| No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 1 mile of known peregrine falcon nests, which have been active within the past 3 years. |
| **CONTROLLED SURFACE USE – BURROWING OWL HABITAT** |
| No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 0.25 mile of known burrowing owl nests, which have been active within the past 3 years. |
| **CONTROLLED SURFACE USE – RAPTORS** |
| Surveys will be required whenever surface disturbances and/or occupancy is proposed in association with fluid mineral exploration and development within potential raptor nesting areas. Field surveys will be conducted as determined by the authorized officer of the Bureau of Land Management. Based on the result of the field survey, the authorized officer will determine appropriate buffers and timing limitations. |
| **CONTROLLED SURFACE USE – FISHERIES** |
| No surface use or otherwise disruptive activity would be allowed within 400 feet of live water or the reservoirs located in the Beaver and Sevier River drainages, Parowan and Cedar Valley drainages, or Pinto Creek/Newcastle Reservoir drainage in order to prevent fisheries degradation. |
| **CONTROLLED SURFACE USE – PYGMY RABBIT** |
| No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility or semi-permanent (e.g., roads, pipelines, reservoirs, etc.) within 300 feet of pygmy rabbit habitat. |
| **CONTROLLED SURFACE USE – UTAH SENSITIVE SPECIES** |
| No surface use or otherwise disruptive activity would be allowed that would result in direct disturbance to populations or individual special status plant and animal species, including those listed on the BLM sensitive species list and the Utah sensitive species list. The lessee/operator is given notice that lands in this parcel have been identified as containing potential habitat for species on the Utah Sensitive Species List. Modifications to the Surface Use Plan of Operations may be required in order to protect these resources from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, Migratory Bird Treaty Act and 43 CFR 3101.1-2. |

**CONTROLLED SURFACE USE – RIPARIAN AREAS**

No surface use or otherwise disruptive activity would be allowed within 100 meters of riparian areas unless it can be shown that (1) there is no practicable alternative; (2) that all long-term impacts are fully mitigated; or (3) that the construction is an enhancement to the riparian areas.

**CONTROLLED SURFACE USE – MEXICAN SPOTTED OWL**

No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 0.5 mile of known Mexican spotted owl nests, or within the designated Protected Activity Center (PAC) that would be likely to disrupt crucial life cycle activities. No surface use or otherwise disruptive activity or permanent structures would be allowed within 0.5 mi of suitable habitat unless surveyed according to protocols and determined as unoccupied.

Additional mitigation measures to avoid or minimize effects to Mexican spotted owls may be developed and implemented in consultation with the FWS between the lease sale stage and lease development state to ensure continued compliance with ESA.

**CONTROLLED SURFACE USE – SOUTHWESTERN WILLOW FLYCATCHER**

No surface use or otherwise disruptive activity would be allowed within a 0.25 mile buffer from occupied breeding habitat and no surface use or otherwise disruptive activity would be allowed within 300 feet of suitable riparian habitat year long.

Additional mitigation measures to avoid or minimize effects to southwestern willow flycatchers may be developed and implemented in consultation with the FWS between the lease sale stage and lease development state to ensure continued compliance with ESA.

**CONTROLLED SURFACE USE – UTAH PRAIRIE DOG**

No surface use or otherwise disruptive activity would be allowed within 0.5 mile of active prairie dog colonies and potentially suitable, unoccupied prairie dog habitat, identified and mapped by Utah Division of Wildlife Resources or BLM since 1976. Within occupied habitat, speed limits would be restricted to 25 mph on operator-created and maintained roads and/or travel would be restricted and/or travel would be restricted between April 1 and September 30 when prairie dogs are most likely to be found above ground.

Additional mitigation measures to avoid or minimize effects to Utah prairie dogs may be developed and implemented in consultation with the FWS between the lease sale stage and lease development state to ensure continued compliance with ESA.

**CONTROLLED SURFACE USE – CALIFORNIA CONDOR**

No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 1.0 mile of known California condor nests. No surface use or otherwise disruptive activity would be allowed which would disrupt California condor breeding activities within established temporal buffers within 1.0 mile of occupied breeding habitat.

No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 0.5 mile of known California condor roost locations. No surface use or otherwise disruptive activity would be allowed which would disrupt California condor roosting activities within established temporal buffers within 0.5 mile of occupied roost sites.

**CONTROLLED SURFACE USE – YELLOW-BILLED CUCKOO**

No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 300 feet of suitable yellow-billed cuckoo riparian habitat.

**CONTROLLED SURFACE USE – VRM CLASS II AREAS**

Only short-term or mitigable visual intrusions on VRM Class II lands would be allowed.
On the lands described below:

For the purpose of:
Preserving the form, line, color or texture of the landscape so as not to attract the viewer's attention as described in the Cedar-Beaver-Garfield-Antimony Resource Management Plan and EIS. Waivers, exceptions, or modifications to this limitation may be specifically approved in writing by the authorized officer of the Bureau of Land Management if either the resource value changes or the lessee/operator demonstrates that impacts can be mitigated. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820).

**CONTROLLED SURFACE USE – MATERIAL SITE RIGHTS-OF-WAY**

Lessee shall conduct operations in conformity with the following requirements:

(1) The Utah State Department of Highways will have unrestricted rights of ingress of the property.
(2) The lease will not conflict with the right of the Utah State Department of Highways to remove any road-building materials from the property.
(3) The Utah State Department of Highways reserves the right to set up, operate, and maintain such facilities as are reasonable to expedite the removal, production, and use of the materials; and the lessee shall not interfere with the Highway Department's use of the property for such purposes.

**CONTROLLED SURFACE USE – ERODIBLE SOILS AND STEEP SLOPES**

The area is a municipal or non-municipal watershed and has steep slopes and erosive soils. New roads will be constructed to avoid soils that are highly erosive and / or in critical or severe erosion conditions. New roads will be constructed with water bars. Riprap may be required. Road grades in excess of 8 percent will normally not be allowed. In special circumstances, where a road grade of more than 10 percent is allowed, its maximum length will be 1,000 feet. Access grading along with exploration, drilling, construction, or other activities will be prohibited during wet or muddy conditions (usually during spring runoff and summer monsoon rains).

**CONTROLLED SURFACE USE – PALEONTOLOGICAL**

Surveys will be required whenever surface disturbances and/or occupancy is proposed in association with fluid mineral exploration and development within geological strata that may contain important paleontological resources. Field surveys will be conducted as determined by the authorized officer of the Bureau of Land Management. Based on the result of the field survey, the authorized officer will determine appropriate mitigations. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2.

**NO SURFACE OCCUPANCY – DEVELOPED OR POTENTIAL RECREATION SITES**

No surface occupancy or use is allowed on developed or potential recreation sites.
On the lands described below:

For the purpose of:
Preserving and protecting the developed and potential recreational sites as described in the Greater Three Peaks Special Recreation Area Plan Amendment. Waivers, exceptions, or modifications to this limitation may be specifically approved in writing by the authorized officer of the Bureau of Land Management if either the resource value changes or the lessee/operator demonstrates that adverse impacts can be mitigated. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation see BLM Manual 1625 and 3101 or FS Manual 1950 and 2820).

**NO SURFACE OCCUPANCY – WATER AND WATERSHED PROTECTION**

In order to prevent water pollution and protect municipal and non-municipal watershed areas, no drilling, occupancy or other surface disturbance will be allowed within 500 feet of live water or the reservoirs located in the Beaver, Milford and Sevier River drainages, Parowan and Cedar Valley drainages, or Pinto Creek/Newcastle Reservoir drainage in order to prevent water quality degradation.

**NO SURFACE OCCUPANCY – STEEP SLOPES**

No surface occupancy or other surface disturbance would be allowed on slopes in excess of 30 percent without written permission from the Authorized Officer.

**Lease Notice – California Condor**

The Lessee/Operator is given notice that the lands located in this parcel contain potential habitat for the California Condor, a federally listed species. Avoidance or use restrictions may be placed on portions of the lease if the area is known or suspected to be used by condors. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs within or outside potential habitat. A temporary action is completed prior to the following important season of use, leaving no permanent structures and resulting in no permanent habitat loss. This would include consideration for habitat functionality. A permanent action continues for more than one season of habitat use, and/or causes a loss of condor habitat function or displaces condors through continued disturbance (i.e. creation of a permanent structure requiring repetitious maintenance, or emits disruptive levels of noise).

The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the Endangered Species Act. Integration of, and adherence to these measures will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of Endangered Species Act, Section 7 consultation at the permit stage.

Current avoidance and minimization measures include the following:

1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All Surveys must be conducted by qualified individual(s) approved by the BLM, and must be conducted according to approved protocol.
2. If surveys result in positive identification of condor use, all lease activities will require monitoring throughout the duration of the project to ensure desired results of applied mitigation and protection. Minimization measures will be evaluated during development and, if necessary, Section 7 consultation may be reinitiated.
3. Temporary activities within 1.0 mile of nest sites will not occur during the breeding season.
5. Temporary activities within 0.5 miles of established roosting sites or areas will not occur during the season of use, August 1 to November 31, unless the area has been surveyed according to protocol and determined to be unoccupied.
6. No permanent infrastructure will be placed within 1.0 mile of nest sites.
7. No permanent infrastructure will be placed within 0.5 miles of established roosting sites or areas.
8. Remove big game carrion to 100 feet from on lease roadways occurring within foraging range.
9. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable habitat Utilize directional drilling to avoid direct impacts to large cottonwood gallery riparian habitats. Ensure that such directional drilling does not intercept or degrade alluvial aquifers.
10. Reinitiation of section 7 consultation with the Service will be sought immediately if mortality or disturbance to California condors is anticipated as a result of project activities. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

Additional measures may also be employed to avoid or minimize effects to the species between the lease sale and lease development stages. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the Endangered Species Act.

## APPENDIX C:

## Response to Public Comments

### OIL AND GAS LEASING IN THE EASTERN PORTION OF THE CEDAR CITY FIELD OFFICE

### Environmental Assessment UT-040-08-036
### August 2008

### COMMENT RESPONSE

| Commenter(s) | Comment Text Summary | BLM Response |
|---|---|---|
| National Trust for Historic Preservation, Anita Lahue, Pamela and Quentin Baker, Laurel Glidden | Expressed concerns over the protection of Parowan Gap and other cultural resources. | It has been decided that parcels in Parowan Gap will be deferred from leasing (see Decision Record). A map of deferred lands in the Gap has been added to the EA (Figure 2 at page 18). The size of the surrounding area to be protected will be determined through an ethnographic study.<br><br>Outside of the Gap, leasing would not occur without the cultural resource stipulation. It is not feasible to conduct detailed surveys of the entire planning area. The categories of low, medium, and high density were used to provide an overview of the area. Because the location of any future APD is not known at the leasing stage, site-specific surveys cannot be completed at this time. Surveys would be completed after submittal of an APD and any cultural resources found would be avoided or mitigated. This was added to the EA (p. 17). The EA also now states (p. 17) that information about regional systems, interactions, or communities is available in files/reports at the CCFO.<br><br>An RMP amendment is outside the scope of this EA (see EA page 13).<br><br>Information regarding consultation for cultural resources has been added to Chapter 5. |
| WildEarth Guardians, Center for Native Ecosystems, Southern Utah Wilderness Alliance, | The additional protections are not adequate, especially for the greater sage-grouse, pygmy rabbit, Frisco buckwheat, Brian Head mountainsnail, and others. | More detail has been added to the EA about sage-grouse, pygmy rabbit, Frisco buckwheat, and Brian Head mountainsnail in chapters 3 and 4. |

| | | |
|---|---|---|
| Western Watersheds Project | | |
| Same as above | Given the scope of the Proposed Action, and the fragile and valuable resources at stake, an EIS is clearly warranted. | After taking a hard look at the potential impacts to the human environment as described by BLM resource specialists, the BLM decision maker has issued a FONSI and Decision Record describing the reasons an EIS is not required. |
| Same as above | The EA fails to justify the purpose and need for the Proposed Action. There is no pressing public interest in leasing, given the suspected grave environmental harms versus the likely insignificant contribution to the fossil fuel supply. Although the likelihood of commercially viable quantities of oil and gas may currently appear low, the process of exploration for oil and gas, particularly seismic exploration, can have substantial environmental impacts. | Some additional language has been added to the purpose and need (p. 5). The BLM is required by law to consider leasing areas which have been nominated. Seismic exploration can occur whether there is leasing or not. One does not necessarily follow from the other. It is agreed that oil and gas exploration can impact natural resources, these are discussed in this EA. |
| Same as above | The BLM fails in this EA to consider that the price of oil is currently over $140/barrel, in contrast to the prior period of 1988-2006. It is important for the BLM to take a precautionary approach: there are environmental qualities of high value in the planning area and there are known risks from oil and gas development. The BLM should err on the side of precaution and adopt the No Leasing Alternative. | The change in the market doesn't change the likelihood of discovery or the regulations regarding oil and gas development. BLM has determined that the Reasonably Foreseeable Development (RFD) scenario is still valid in today's market. If a discovery is made the RFD would no longer be valid and a new analysis would have to be completed. |
| Same as above | BLM must consider climate change in its analysis. The decision to open these lands to oil and gas extraction will contribute to climate change in a variety of ways. | More information has been added to the climate change discussion in Chapter 1. In the context of the RFD, any contribution to global warming would still be considered negligible and as such would not contribute substantially to cumulative impacts to the human environment. |
| Same as above | There is significant new information about climate change that was not considered by the EA or the RMPs and amendments that it tiers to such that the EA, Plans, and Amendments are not adequate NEPA documents on which to base the decision to open the area to leasing. | Climate change is considered in this EA. It is consequently not necessary to tier to previous NEPA documents regarding this issue. |
| Same as above | BLM has failed to consider the cumulative impacts of greenhouse | As stated in the RFD, based on all available data, the likelihood of development is very low. The |

| | | |
|---|---|---|
| | gas emissions from this decision to open lands to leasing with greenhouse gas emissions from other BLM actions. | three wells per year, as anticipated by the RFD would result in negligible impacts to greenhouse gas emissions and global warming issues. In truth, no producible oil and gas has ever been discovered in the planning area; consequently the RFD errs on the side of resource protection. Since it is anticipated that impacts to greenhouse gas emissions from the proposed action would be negligible, no cumulative impacts to global warming would be expected. |
| Same as above | BLM has also failed to comply with NEPA by failing to consider a reasonable range of alternatives. BLM has failed to consider requiring all gas activities to comply with the U.S. EPA's GasStar program. U.S. EPA has made clear that this is an alternative that needs to be considered in the NEPA context to prevent the release of a potent greenhouse gas. | EPA's Gas Star program is a voluntary program to prevent the release of greenhouse gases; it is not a decision which BLM can require. |
| Same as above | BLM has failed to comply with Department of Interior Secretary Order #3226. BLM is currently in violation of this order because it has not considered and analyzed the potential climate change impacts from the decision to open these lands to leasing. | Information regarding this Order has been added to Chapter 1. |
| Same as above | The Proposed Alternative fails to provide adequate protection for suitable Utah prairie dog habitat by not sufficiently curtailing oil and gas activities in Utah prairie dog habitat. | The importance of the planning area to the Utah prairie dog's range is stated on pages 21 and 22. Information has been added to the EA (pages 49-50) about specific harm to prairie dogs. Fish and Wildlife Service (FWS) concurrence for the proposed action is based on the Dec 16 2004 letter discussed on pages 48- 49). |
| Same as above | The Utah prairie dog stipulation does not adequately protect this federally listed species. For instance, oil and gas activities 0.5 miles from Utah prairie dog colonies and potential habitat can impede dispersal by yearling males to nearby colonies, which is a crucial component of Utah prairie dog biology. These oil and gas activities may also fragment lands around habitat suitable for prairie dog occupancy, thereby causing landscape-level degradation and further hindering Utah prairie dog survival and recovery. It is unclear why BLM | As stated above, the FWS has determined that the Controlled Surface Use stipulation would be adequate to protect Utah prairie dogs.<br><br>BLM IM 2003-234 states than when reviewing lease stipulations through the Use Authorization/NEPA analysis process, consideration must be given to the least restrictive constraint necessary to meet the resource protection objective. Conditions of Approval (COAs) resulting from site-specific NEPA analysis must be science- or safety-based, incorporate "best management practices," and be consistent with the requirements of the lease terms, stipulations, applicable regulations and |

| | | |
|---|---|---|
| | applies a controlled surface use stipulation to parcels containing Utah prairie dog habitat (See EA at p. 11 (Table) and p. 73), rather than applying NSO stipulations to any parcels with Utah prairie dog habitat. A NSO stipulation would be far more effective at preventing harm than controlled use. | laws. |
| Same as above | Oil and gas activities 0.5 miles from Utah prairie dog habitat could result in the proliferation of noxious weeds, particularly cheatgrass, that degrade prairie dog habitat. | Weeds would be monitored and controlled as stated in the EA. |
| Same as above | It is not clear that traveling 25 miles per hour down dirt roads through Utah prairie dog occupied habitat in the planning area is a sufficiently low speed limit to prevent prairie dog mortality. BLM should monitor whether that speed limit is preventing prairie dog mortality and adjust it downward if necessary. | The EA states that low amounts of traffic may limit mortality, but acknowledges that mortality may still occur (pages 49-50). |
| Same as above | The EA also fails to adequately consider in its discussion of cumulative impacts at pp. 57-59 the cumulative impacts to Utah prairie dogs from other activities authorized on BLM lands, USFS lands, and private and state lands in the planning area. These include harms from livestock grazing and ORV use. | Language has been added to the cumulative effects section about prairie dogs and habitat disturbance from ORVs. As stated in this section, there have not been any studies regarding the impacts of ORVs to Utah prairie dogs, so impacts are not quantifiable. |
| Same as above | The discussion of the affected environment fails to disclose with any specificity the adverse impacts to Utah prairie dogs in the planning area from oil and gas leasing and subsequent development. The BLM fails to recognize that Utah prairie dogs face significant threats from drought and climate change. Given uncertainties either way for the Utah prairie dog, oil and gas (along with other land uses such as livestock grazing and off-road vehicles) should all be circumscribed in anticipation of these broad dynamics over which humans can exert little immediate influence. The EA fails to address | There has been no oil and gas development in the planning area, so there is nothing to quantify. In terms of exploration activities, it has been determined by FWS, as stated in previous NEPA documents, that these activities, as mitigated, would not adversely affect Utah prairie dogs populations in the planning area. |

| | | |
|---|---|---|
| | these threats adequately, therefore violating ESA requirements that federal agencies must avoid jeopardizing and promote conservation of listed species. | |
| Same as above | Lease stipulations for greater sage-grouse habitat are inadequate to prevent the extinction of the species. New information has become available subsequent to the FWS's positive 90-day finding which are not discussed. Timing limitations still allow for the destruction and degradation of sage-grouse habitat. The wording of the Controlled Surface Use measure would only disallow aboveground structures – other types of disturbance evidently would be permitted. The best available science indicates that these measures will not be sufficient to conserve sage-grouse. | Additional information regarding sage grouse has been included into the EA (pages 29-30).<br><br>The buffer is generally recognized as a minimum distance, which BLM may be compelled to increase in certain areas. BLM anticipates using site-specific review and targeted COAs at the APD stage to review the status of leks at the time (IBLA 2004-316). BLM issued IM 2004-057, which catalogs the history of scientific thought regarding protection for habitat, leks and nesting areas. The IM pursues a site-specific policy for sage grouse management which maintains minimum requirements for buffers, a 2-mile radius as a "flagging device" for stipulations and COAs, diurnal timing limitations, and seasonal restrictions. But, it also imposes a policy of case-by-case mapping of sage grouse habitat, including nesting habitat, to better protect nests that are beyond a 2 mile radius "regardless of distance from leks" while allowing disturbance in areas within such a radius that do not provide suitable habitat. |
| Same as above | The BLM has not provided any supporting evidence that the proposed lease notices will effectively mitigate impacts to greater sage-grouse. The buffer areas that the agency has selected around leks and the timing limitations have not been connected to any sage-grouse science in the EA, and therefore appear arbitrary. | Additional information referencing the multi-state document was added (p. 55) to illustrate sources for these protective measures. The national plan for sage grouse conservation measures would be applied as recommended by best science and UDWR, who currently have management authority over the species. |
| Same as above | IBLA states that: A finding that impacts of issuing an oil and gas lease would not be significant due to the mitigative effects of a …stipulation must be based on NEPA analysis. The stipulation does not provide a basis for deferring an environmental analysis in the absence of an existing NEPA statement that includes an analysis of the mitigative effects of the stipulation | This EA is the necessary document required by this IBLA decision. |

| | | |
|---|---|---|
| | (170 IBLA 332)…Although BLM attached a stipulation to the leases for the protection of special status species, BLM has identified no NEPA document containing an analysis of the mitigative effect of that stipulations. | |
| Same as above | Pygmy rabbit **-** The full effects of much of this activity, including noise, on pygmy rabbits are not understood or disclosed in the EA. These impacts to pygmy rabbits are not sufficiently disclosed, considered, or addressed in the EA. | Additional information on recent BLM discussions regarding effectiveness of buffer zones for pygmy rabbit has been added on pages 55-56. |
| Glen T. Nebeker -WESTERN LAND SERVICES | To lease Federal parcels for oil and gas development with standard or special stipulations or not to lease any given parcel is a land use planning decision. It is a resource allocation decision for the uses of Public Lands and resources. The analysis should document whether or not oil and gas development is compatible with other resource uses in the same area, and if so under what conditions. This EA does not accomplish this. Without a plan amendment changes to these decisions cannot be made. | The BLM has the authority to lease or not to lease parcels without a land use plan decision change. The BLM does not have the authority to change lease categories addressed in a land use plan without an amendment to that plan. One of the reasons for this EA is to "document whether or not oil and gas development is compatible with other resource uses in the area". |
| Same as above | EA Page 5, 1.1 Purpose and Need, The purpose of this EA is to analyze leasing of oil and gas parcels that cannot be leased at this time without this analysis due to changes in the human environment that have occurred since the completion of the current LUP and supplemental analysis for oil and gas leasing. As written you cannot tell what changes to the human environment have occurred to trigger this analysis. There are lengthy descriptions in the affected environment but no discussion of the changes. It appears that this document was written to present a list of stipulations that could be used, including NSO. | Additional information has been added to the purpose and need section listing some of the resources which have changed since the land use plan was enacted. |
| Same as above | NSO could be applied under the Proposed Action alternative; therefore, the NSO alternative was not carried forward as a separate | Under the proposed action, certain areas of a lease could effectively be unavailable for surface disturbance, but an entire lease would not be considered NSO. Some portion of the lease |

| | | |
|---|---|---|
| | alternative. However, if NSO was needed for large areas, it would necessitate consideration of a plan amendment in the leasing category. Applying NSO to new areas is a change in leasing category and would require a plan amendment. | would be available for exploration or development. Consequently, the lease category would not need to be modified. |
| Same as above | Based on the activity in both the Richfield and Cedar Field Office Areas the RFD may be an underestimate and an increase should be considered. | There has never been any oil or gas produced in the planning area. All exploration wells have not resulted in a producible discovery. This is the data we have from which to base our analysis. Any suggested increase would be arbitrary. |
| Same as above | The stipulations, if applied as presented in Appendix B, provide no option for continued operation or maintenance of producing wells. Operations could be shut down during the seasonal limitation. Most stipulations on existing leases have something like the following statements, which were taken from existing leases:<br>"The distance may be modified when specifically approved in writing by the authorized officer of the Bureau of Land Management."<br>"This limitation does not apply to maintenance and operations of producing wells. Exceptions to this limitation in any year may be specifically approved in writing by the authorized office of the Bureau of Land Management."<br>"This limitation does not apply to maintenance and operations of producing wells." | Because no production has occurred in the planning area, stipulations have not been fine-tuned. Should development occur to any extent in the future, the stipulations could be re-analyzed. The wording could be revised at the APD stage if needed. |
| Same as above | Effects to cultural resources and Native American Religious Concerns under the Proposed Action alternative would be similar to those described above for the No Action alternative because the same types of protections would be implemented. In addition, however, application of NSO could occur under this alternative where necessary to protect cultural resources. There is no such stipulation in Appendix B, and to create one would require an RMP Plan Amendment because it would be a change in leasing category. | If there is a high intensity cultural conflict, the area would be deferred. This is within the authority of the BLM and would not require a land use plan amendment. |
| Same as above | EA Page 50, NSO could also be | Language has been added to the EA to clarify |

| | | |
|---|---|---|
| | applied under this alternative to protect resources and would reduce the potential for adverse effects to vegetation by precluding establishment of wells or well pads or construction of roads, pipelines, or power lines in a specified area. There is no such stipulation in Appendix B, and to create one would require an RMP Plan Amendment because it would change leasing category. | that NSO could be applied to parts of a lease to protect other resources and would thus indirectly benefit vegetation and other resources. |
| Same as above | EA Page 51, NSO could also be applied under this alternative to protect resources [invasion of noxious weeds] and would reduce the potential for adverse effects to vegetation by precluding establishment of wells or well pads or construction of roads, pipelines, or power lines in a specified area. There is no such stipulation in Appendix B, and to create one would require an RMP Plan Amendment because it would be a change in leasing category. | Language has been added to the EA to clarify that NSO could be applied to parts of a lease to protect other resources and would thus indirectly benefit vegetation and other resources, inhibiting the growth of invasive or noxious weeds. |
| Same as above | EA Page 54, NSO could also be applied under this alternative, prohibiting any development or disturbance of the land surface associated with a parcel [to limit visual impacts]. There is no such stipulation in Appendix B, and to create one would require an RMP Plan Amendment because it would be a change in leasing category. | Language has been added to the EA to clarify that NSO could be applied to parts of a lease to protect other resources and would thus indirectly benefit visual resources. |
| Same as above | EA Page 55, NSO could also be applied under this alternative for the protection of paleontological resources, in which case no surface development or disturbance of the area associated with the resource would be allowed. There is no such stipulation in Appendix B, and to create one would require an RMP Plan Amendment because it would be a change in leasing category. | Language has been added to the EA to clarify that NSO could be applied to parts of a lease to protect other resources and would thus indirectly benefit paleontological resources. |
| Utah SHPO | Concur with determination of no adverse effect. | Added consultation information to EA |
| Paiute Indian Tribe of Utah | We recommend no oil & gas leasing of the entire Parowan Gap and Black Rock area until the | The Parowan Gap area will be deferred from leasing; additional ethnographic studies will determine the extent of the deferral area. |

| | | |
|---|---|---|
| | Paiute and Hopi tribes, along with the BLM can adequately assess the extent of Native American values in the area or that appropriate long-term protections can be applied. In light of this "our preference is the 'no leasing alternative' for the Parowan Gap area. For other than the Parowan Gap area, the Tribe prefers the proposed action alternative because it allows a NSO limitation where circumstances warrant. | |
| Southern Utah Wilderness Alliance | Granite Peak -wilderness inventory area: BLM's discussion of the Granite Peak wilderness inventory area does not constitute a hard look at the impacts of oil and gas leasing and development to the area's wilderness values. | This area will be deferred from leasing. The information in the comment letter will be provided to the CCFO and used at the appropriate time in the LUP process. |
| Same as above | The BLM must fully consider an alternative that would protect the wilderness characteristics of the Antelope Range (i.e., through the use of NSO stipulations or closing the area to new leasing). As part of this analysis, BLM should discuss whether protecting the proposed Antelope Range wilderness unit through category 3 or 4 lease stipulations would change the RFD scenario for the planning area. If, as SUWA predicts, protecting this area will not change the area's RFD, BLM should designate the alternative protecting these wilderness values as the agency's preferred alterative | The Antelope Range will be deferred from leasing. The wilderness character submission in the comment letter will be provided to the CCFO and used at the appropriate time in the LUP process. |
| Same as above | Parowan Gap and Mineral Mountain ACEC nominations. These submissions represent significant new information about environmental values that have not been previously considered or analyzed by BLM. BLM must now determine whether the Parowan Gap and Mineral Mountain ACEC nominations meet FLPMA's relevance and importance criteria. Once BLM determines that the proposed Parowan Gap and Mineral Mountain ACECs meet FLPMA's relevance and | These areas will be deferred from leasing. The information in the comment letter regarding the ACEC nominations will be provided to the CCFO and used at the appropriate time in the LUP process. |

| | | |
|---|---|---|
| | importance criteria, BLM must revise the EA to consider an alternative that would protect those values. As part of this analysis, BLM should discuss whether protecting the proposed Parowan Gap and Mineral Mountain ACECs through category 3 or 4 lease stipulations would change the RFD scenario for the planning area. If, as SUWA predicts, protecting this area will not change the area's RFD, BLM should designate the alternative protecting these proposed ACECs and their values as the agency's preferred alternative. | |
| Same as above | NEPA: The EA considers an inadequate range of alternatives. Because BLM is not, considering any changes to the leasing categories (which would require a plan amendment), there is no distinction between the no action alternative and the proposed action. BLM seems to acknowledge in its discussion of the no-action alternative that it has the authority -though not the will- to impose what effectively amount to category 2 (or even category 3) lease stipulations under the current plan. The proposed action alternative alleges that BLM can impose what amounts to heightened (category 2) lease stipulations on lands designated as open to leasing with standard stipulations. This, interpretation of lease stipulations runs directly counter to BLM's pattern of leasing decisions over the past 8 years. | The distinction between the proposed action and the no action alternative are the additional stipulations which would be applied. Although the comment states that this is counter to BLM's pattern, it does not state why it should not be done. |
| Same as above | NEPA: The EA fails to adequately consider the no leasing alternative. The EA must quantify the environmental and socio-economic costs and benefits of adopting this alternative. The discussion of the no leasing alternative does not meet the "rule of reason" test applied by both the Interior Board of Land Appeals and the courts. | The environmental and socio-economic costs and benefits of adopting the no leasing alternative are addressed in the EA. |
| Same as above | NEPA: The EA fails to take a hard look at significant new information | The most up to date information available from UDWR regarding Rocky Mountain elk and mule |

| | | |
|---|---|---|
| | from the Utah Division of Wildlife Resources (UDWR) regarding Rocky Mountain elk and mule deer crucial value habitats. The EA alludes to, but does not discuss in detail, new data layers from UDWR that depict current crucial value habitat. | deer crucial value habitats have been added to the EA (p. 26). |
| Same as above | NEPA: The EA fails to take a hard look at the impacts of the Milford Flat Fire and whether certain parts of the project area should be temporarily closed through November 2009 to surface disturbing activities such as oil and gas development activities. | Information concerning the impacts of the Milford Flat Fire and whether the area should be temporarily closed has been added to the EA. The BLM would look specifically at access plans at the time an APD is filed. |
| Same as above | FLPMA: The EA fails to distinguish between non-binding lease notices and lease stipulations. Though BLM says that it can impose "lease stipulations," it is limited to stipulations that are consistent with the leasing category. Even if the lands at issue are category 2, it is unclear whether BLM can or will impose lease stipulations that are inconsistent with the rationale behind the stated need for the heightened protection. | In Category 1 areas, the protective measures would be included as lease notices. In Category 2 areas, the protective measures would be included as lease stipulations. If a lease area contained lands which were felt could not be adequately protected by the lease notice or stipulation, the area was deferred. |
| Same as above | Air Quality and Climate Change: The EA fails to consider the potential impacts of oil and gas development activity on air quality and global warming. | Language has been added to the EA on climate change (as noted above) and on the potential impacts to air quality (pages 7-8). Given the RFD scenario analyzed, impacts to air quality and climate change would be negligible. |
| Same as above | The EA contains no analysis (direct, indirect, or. cumulative), of how surface disturbing activities from this project will increase eolian dust deposition or cumulative eolian dust deposition from this project and other disturbances, regional climate; mountainous snow cover, or terrestrial nutrient cycling. | Given the RFD scenario coupled with BMPs that would minimize dust, any dust issues would be minimal. These issues would be looked at on a project-specific level if an APD were submitted. |
| Same as above | "[w]e can anticipate further reductions in the level of allowable uses on public lands due to the loss of productivity and capacity. The results are more fragile ecosystems, a greater susceptibility to the outbreaks of attacks by parasites and disease; | The cumulative impacts section acknowledges this statement but these issues are not quantifiable. |

| | | |
|---|---|---|
| | increased vulnerability to wildland fire and erosion and an overall reduction in the carrying capacity of the land. | |
| Same as above | A recent study by the U.S. Geological Survey predicts that decreased precipitation, increased temperatures, decreased runoff and dry soil will result from global warming. | These issues are acknowledged in the EA but state that due to RFD impacts are expected to be negligible. |
| Same as above | The EA does not discuss the cumulative effects of various uses like ORV recreation and grazing on, for example, riparian areas and soil stability. These cumulative effects should also be considered in the context of climate change and how these uses, combined with the proposed project will act to exacerbate climate change on both a global and regional scale. | If there is a negligible impact on certain resources from oil and gas leasing and expected development, then there would not be a cumulative impact to these resources. Analyzing the impacts of ORV and grazing, if not cumulative to the impacts from the proposal, is beyond the scope of this EA. |
| Same as above | BLM must conduct comprehensive paleontological surveys before the agency sells leases in order to protect this non-renewable resource. | As stated in the EA, inventories of leases would be conducted at the APD stage to determine the presence of, and protection requirements needed for, paleontological resources. |
| Same as above | Although the EA states that operators would be required to use BMPs with respect to soils and that steep slopes would be managed as NSO, the EA fails to adequately disclose and analyze the soil erosion, dust, and air quality from the increase in lease-related roads, increased truck traffic on the roads, and the associated dust and erosion caused by off-road vehicles that will use these roads once they are in place. | The RFD scenario indicates a negligible effect to these resources within the planning area. |
| Same as above | The EA at 29 notes that there are 12 special status plant species in the planning area, yet the BLM proposes to lease the areas before conducting surveys to record where the species are currently located. As noted above for other resources, BLM must conduct an inventory of the leasing planning area prior to finalizing the EA to determine where, in fact, the special status plant species are located in the planning area, and | The BLM will conduct these inventories if and when an APD is submitted and will avoid any species found or mitigate any impacts as required by regulations |

| | | |
|---|---|---|
| | avoid issuing leases in such areas. | |
| Same as above | The presence of non-native vegetation played a large role in the intensity and size of the Milford Flats fire. The EA fails to disclose and analyze the increase in nonnative and invasive vegetation once the surface is disturbed. | Non-native and invasive species have been discussed in the EA. |
| Same as above | The EA fails to take a hard look at the potential impacts to riparian areas. The EA fails to inform the public and the decision maker of the direction provided by the Utah Riparian Policy. The EA notes that special protections would be afforded riparian areas, locating developments 400 feet from riparian areas. However, the EA fails to provide scientific data that suggests that a 400 foot buffer is adequate to protect riparian areas, and fails to assess the impacts to riparian areas from the various types of oil and gas development, such as road construction, increased erosion and dust from roads, sludge pits, and, waste water pits. BLM must modify the EA to comply with the Utah Riparian Policy of protecting and improving riparian areas. | Appendix A explains the Utah Riparian Policy of protecting and improving riparian areas and the scientific data that suggests that a 400 foot buffer is adequate to protect riparian areas. |